

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
27 December 2002 (27.12.2002)

PCT

(10) International Publication Number  
WO 02/103028 A2

- (51) International Patent Classification<sup>7</sup>: C12Q (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.
- (21) International Application Number: PCT/IB02/04189
- (22) International Filing Date: 30 May 2002 (30.05.2002)
- (25) Filing Language: English
- (26) Publication Language: English (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (30) Priority Data:  
60/293,999 30 May 2001 (30.05.2001) US  
60/330,457 22 October 2001 (22.10.2001) US  
60/357,144 19 February 2002 (19.02.2002) US
- (71) Applicant: BIOMEDICAL CENTER [RU/RU]; 7, Pudozhskaja St., 197110 St. Petersburg (RU). Published:  
— without international search report and to be republished upon receipt of that report
- (72) Inventors: BARANOVA, A. V.; Moscow (RU). YANKOVSKY, N. K.; Moscow (RU). KOZLOV, A. P.; St. Petersburg (RU). LOBASHEV, A. V.; Moscow (RU). KRUKOVSKAYA, L. L.; Moscow (RU). For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IN SILICO SCREENING FOR PHENOTYPE-ASSOCIATED EXPRESSED SEQUENCES

WO 02/103028 A2

(57) Abstract: The present invention provides methods for determining whether a nucleic acid sequence is a marker for a phenotype or cell type of interest which comprises providing a database of expressed sequence tag sequences (EST's) from the species; placing said EST's in groups termed clusters based on homology of EST's within each cluster; determining for each cluster the total number of EST's within said cluster; ordering said clusters sequentially based on the number of EST's in each cluster; dividing said ordered clusters into subranges based on the number of EST's per cluster; determining for each cluster subrange obtained from step (e) the number EST's within said cluster which are expressed in said predetermined cell type of interest; calculating according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in said cell type of interest, wherein said threshold percentage is a percentage from about 10% to about 100%; determining the number of clusters in each subrange observed to contain said predetermined threshold percentage of EST's expressed in said predetermined cell type; and identifying subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said predetermined threshold percentage for the subrange according to normal distribution; wherein if the percentage of EST's expressed in said cell type of interest in a cluster identified is equal to or greater than said predetermined threshold percentage, the cluster contains a nucleic acid that is a marker for the cell type of interest.

## IN SILICO SCREENING FOR PHENOTYPE-ASSOCIATED EXPRESSED SEQUENCES

5

### FIELD OF THE INVENTION

[0001] The present application is related to, and claims the benefit of priority of, Provisional Application No.'s 60/293,999, filed May 30, 2001, 60/330,457, filed October 22, 2001, and 60/357,144, filed February 19, 2002, all of which are incorporated in their entirety by reference  
10 herein.

[0002] The invention relates generally to the field of genetics and differential expression of genes of interest. More specifically, the invention relates to methods for detecting expression of nucleic acids or proteins associated with a particular phenotype by performing a differential global comparison of a group of Expressed Sequence Tags (EST's) expressed in a particular tissue or cell  
15 type with a larger group of available EST's for a plurality of cell types.

[0003] The publications and other materials used herein to illuminate the background of the invention or provide additional details respecting the practice are incorporated by reference.

### BACKGROUND OF THE INVENTION

20 [0004] Comparing patterns of gene expression in different cell lines and tissues has important applications for a variety of biological problems. Such information is useful, for example, in comparing mechanisms of differentiation, microbial pathogenesis or tumor malignancy. Typically, such information is obtained by detecting altered gene or protein expression patterns associated with a particular phenotype. Comparing patterns of expression is particularly important,  
25 for example, in determining pattern(s) of expression that lead to aberrant cell growth, especially in tumor formation and cancer. A number of experimental methods have been designed for the detection of phenotype or celltype associated gene expression. Most of them are based on time-consuming and expensive experimental protocols (e.g., numerous modifications of the differential display approach, cDNA microarrays, or Serial Analysis of Gene Expression).

30 [0005] EST's are an integral tool in the study of differential expression patterns. The total number of human ESTs in publicly available databases ( $>4 \times 10^6$ ) exceeds by approximately two orders of magnitude the total number of different transcripts that can be deduced from the number of human genes ( $2.5 - 4 \times 10^4$ ). Accordingly, there presently exists a need for computer-based



procedures for the detection of EST expression profiles to replace traditional experimental protocols utilized in gene expression profiling.

[0006] UniGene is an experimental system for automatically partitioning GenBank sequences into a non-redundant set of gene-oriented EST clusters based on DNA sequence  
5 homology. Each UniGene cluster contains homologous or similar sequences that represent a unique “gene” or RNA transcript, as well as related information, such as the tissue type(s) in which expression of the transcript has been detected and the map location of the gene encoding the transcript. In addition to sequences of well-characterized genes, hundreds of thousands of novel EST’s are also included in the UniGene partitioning system. Clustering is the process of finding  
10 subsets of sequences which belong together within a larger set. This is done by converting discrete similarity scores to boolean links between sequences using techniques well known in the art. That is, two sequences are considered linked if their similarity or homology exceeds a threshold. Sequence pairs which are sufficiently similar are linked together to form initial clusters. The set of ESTs is compared with the set of genes using the “megablast” algorithm (Zhang et al., J Comput  
15 Biol;7(1-2):203-14 (2000)) and sufficiently similar sequence pairs are added to a particular cluster. A detailed description of clustering performed in the UniGene system can be found at <http://www.ncbi.nlm.nih.gov/UniGene>.

[0007] Differentially expressed EST clusters may be useful as phenotypic markers and prognostic indicators and may be suitable targets for various therapeutic interventions. Prior art  
20 methods for the detection of phenotype or cell type of interest or expression patterns have included pairwise comparison of expression patterns in a the phenotype or cell type of interest and corresponding normal tissue in order to determine transcripts which are expressed either specifically or in higher quantities in the cell type of interest. As an example, such pairwise comparisons have been done for tumor-associated expression patterns.

25 [0008] The technique of computer based differential display (CDD) compares expression patterns in a particular tissue versus another tissue source. The comparison can be based on sequence databases available in the World Wide Web. This technique has been used to identify prostate-associated genes (Vasmatzis et al. Proc.Natl. Acad. Sci. USA 95, 300-304 (1998)) or ectopically expressed genes in particular tumor types in comparison to corresponding normal tissue  
30 (Schuerle et al. Cancer Res. 60, 4037-4043 (2000)).

[0009] There presently exists a need to develop computer based methods for comparing

large numbers of EST's in a global fashion with all known phenotype-associated EST's, so that phenotype-associated patterns of gene expression can be culled from the massive number of such sequences available, without the need for an extensive number of microarray analyses or serial analyses of gene expression in a pairwise manner between a cell type of interest and another individual cell type.

### SUMMARY OF THE INVENTION

[00010] The present invention provides methods for the detection of nucleic acid markers associated with a cell type or phenotype of interest by performing a global comparison of a group of EST's known to be expressed in the cell type or phenotype of interest with all EST's expressed in normal tissue in order to identify EST's that are preferentially expressed in the cell or phenotype of interest. The methods comprise arranging both the EST's of interest from a particular species and a larger group of other EST's available for the species in clusters based on homology among the EST's. The methods further comprise arranging the clusters into distinct subranges based on the number of EST's in each cluster and, based on the percentage of EST's derived from the cell type of interest, calculating the number of clusters expected to contain a predetermined percentage of EST's from the cell type of interest. Subranges which contain more than the expected number of clusters containing at least or more than the predetermined percentage of EST's from the cell type are selected for further analysis. The present invention also presents a method for determining a computer based differential display (CDD) of cell or phenotype-associated genes. In one embodiment, the cell or phenotype associated markers are determined for a tumor cell. In a preferred embodiment, at least some of the discrete steps in the method are performed on a computer and comparisons are made between global expression patterns of EST's in a specific cell type or phenotype (such as, *e.g.* tumor) versus global expression patterns of EST's in all other tissue. Alternatively, the comparisons can be made between EST's expressed in a specific cell type and EST's expressed in normal tissue. The approach was inspired by the hypothesis that evolutionary selective pressures might provide conditions for expression of genes that are not expressed in normal tissue (Kozlov, Medical Hypotheses 46, 81-84 (1996)).

[00011] In one embodiment, the invention provides methods for the detection of phenotype or cell type-associated markers by global comparison of all phenotype or cell type-associated EST's with all known EST's to identify EST's that are preferentially expressed in cells expressing the

particular phenotype. In a particularly preferred embodiment, the phenotype is tumor formation and the cell type is a tumor cell. Thus, in one embodiment, the invention provides a method for the detection of tumor markers by global comparison of all tumor associated EST's with all known EST's to identify EST's that are preferentially expressed in tumors.

5 [00012] In another embodiment, the invention provides a method for the detection of stress-related genes in a plant model relevant to agricultural plants. Thus, in another preferred embodiment, comparisons are made between global expression patterns of EST's in *Arabidopsis thaliana* grown in stress conditions (i.e., drought, cold, high salt concentration) versus global expression patterns of EST's in *A. thaliana* cultivated under normal conditions. Comparisons can  
10 also be made between mature plant cells and cells from roots or shoots.

[00013] Analysis of combined preparations of mRNAs from several tissues in saturation and experimental subtractive hybridization procedures indicate that tumors contain more diverse sets of mRNAs than any normal tissue. This observation led to the idea of subtracting all available normal EST's (instead of pairwise comparisons) from all available tumor and corresponding normal tissue.  
15 (Evtushenko et al. Mol.Biol. 23, 510-520 (1989).

[00014] In one embodiment, the invention provides a method for determining whether a nucleic acid sequence is a marker preferentially expressed in a phenotype or cell type of interest from a biological species. In a preferred embodiment, the invention is performed with the aid of statistical software analysis and one or more computers and comprises the following steps: (a) providing a  
20 database of expressed sequence tag sequences (EST's); (b) placing said EST's in groups termed clusters based on homology of EST's within each cluster; (c) determining for each cluster the total number of EST's within said cluster; (d) ordering said clusters sequentially based on the number of EST's in each cluster; (e) dividing said ordered clusters into subranges based on the number of EST's per cluster; (f) determining for each cluster subrange obtained from previous step (e) the  
25 number EST's within said cluster which are expressed in said predetermined cell type of interest; (g) calculating according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in said cell type of interest, wherein said threshold percentage is a percentage from about 10% to about 100%; (h) determining the number of clusters in each subrange observed to contain said predetermined threshold  
30 percentage of EST's expressed in said predetermined cell type; and (i) identifying subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the

number of clusters expected to meet said predetermined threshold for the subrange according to normal distribution; wherein if the percentage of EST's expressed in said cell type of interest in a cluster identified in (i) is equal to or greater than said predetermined threshold percentage, said cluster contains a nucleic acid marker preferentially expressed in the cell type of interest. In preferred embodiments, the clusters of the invention are derived from the UniGene database, which contains all sequences associated with a cluster. The clusters have unique "Hs." Unigene cluster ID numbers to identify the cluster based on homology. Thus, once a cluster is identified as associated with a phenotype using the EST's from the cluster, the cluster-identifier can be used to identify all other sequences associated with the cluster such as full length mRNA's that are homologous to the EST's in the cluster. In this manner, a reference nucleic acid or polypeptide sequence for the cluster can be determined by reviewing the Unigen database. The methods of the present invention can be used with any database, as long as the database contains sequences that can be arranged in clusters based on homology.

[00015] In one embodiment, the invention provides a method for determining whether a nucleic acid is a marker in humans preferentially expressed in a tumor cell. In this embodiment, EST's from a database containing human EST's which contain a description of the source of the EST's retrieved from the cluster description are provided and arranged in individual clusters based on homology; for each cluster the total number of EST's within said cluster is determined; said clusters are ordered sequentially based on the number of EST's in each cluster; said ordered clusters are divided into subranges based on the number of EST's per cluster; the number of EST's within said cluster which are expressed in tumors is determined for each cluster subrange; there is then calculated according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in tumors, wherein said threshold percentage is a percentage from about 90% to about 100%; the number of clusters is determined in each subrange observed to contain said predetermined threshold percentage of EST's expressed in tumors; and subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said predetermined threshold for the subrange according to normal distribution are identified; wherein if the percentage of EST's expressed in said cell type of interest in a cluster from a subrange identified as having a greater than expected number of such clusters is equal to or greater than said predetermined threshold percentage, said cluster contains a nucleic acid marker preferentially expressed in tumors.

[00016] In another embodiment, the invention provides a method for detecting EST expression in stress induced *A. thaliana* which comprises the following steps: (a) for all individual *A. thaliana* EST clusters, the number of ESTs is retrieved from the cluster description; (b) next, the number of ESTs from all stress-induced cDNA libraries present in each cluster description is counted; (c) there is then determined for each cluster the total number of EST's within said cluster; (d) said clusters are ordered sequentially based on the number of EST's in each cluster; (e) said ordered clusters are then divided into subranges based on the number of EST's per cluster; (f) it is then determined for each cluster subrange obtained from previous step (e) the number of EST's within said cluster which are expressed in Arabidopsis cells presented with stress conditions; (g) there is then calculated according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in said cell type of interest, wherein said threshold percentage is a percentage from about 10% to about 100%; (h) the number of clusters in each subrange observed to contain said predetermined threshold percentage of EST's expressed in said predetermined cell type is determined; and (i) subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said predetermined threshold for the subrange according to normal distribution are identified; wherein if the percentage of EST's expressed in stress-induced plants in a cluster identified in (i) is equal to or greater than said predetermined threshold percentage, said cluster contains a nucleic acid marker preferentially expressed in the stress-induced plants.

[00017] The invention thus provides a method for correlating EST expression with a phenotype and in one embodiment requires correlation between a central unit or units containing EST sequence information. In a preferred embodiment, at least some of the EST sequence information analysis is implemented on a conventional personal computer, with the correlator being embodied in a software program. Because the correlator is embodied in software, it may be transported among various computers, which may be used separately or together to perform some or all of the various operations discussed herein.

[00018] In another embodiment, the invention provides a method for identifying a tumor cell which comprises detecting the expression of a tumor-associated marker of the present invention. As discussed in greater detail *infra*, the tumor-associated marker can be a nucleic acid or a polypeptide or fragments thereof.

[00019] In another embodiment, the invention provides a method for detecting a tumor cell by detecting the expression of nucleic acid sequences which are tumor-associated and can be used as diagnostic tools for the detection of tumor tissue. The tumor-associated nucleic acids are detected using the methods for determining whether a nucleic acid sequence is a marker for tumors as described herein. The sequences may be utilized for both *in vitro* and *in vivo* screening for the presence of a tumor cell. In one embodiment, the invention provides a method for detecting the expression of a tumor-associated nucleic acid sequence wherein the sequence is selected from the group consisting of SEQ ID NO:'s 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 33, 35, 37, 39, 41, 45, 47, 55, 57, 59, 61, 63, 65, 67, 69, 73, 75, 77, 79, 81, 83, 89, 91, 93, 95, 97, 99, 101, 103, 107, 109, 111, 113, 115, 117, 119, 121, 123, 127, 129, 131, 133, 135, 137, 138, 140, 142, 144, 146, 148, 150, 153, 155, 157, 158, 160, 162, 164, 166, 168, 172, 174, 176, 178, 180, 182, 184, 186, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, and 414. In a particularly preferred embodiment, the nucleic acid sequence is selected from the group consisting of SEQ ID NO:'s 73, 184, 186 and 242.

[00020] In another embodiment, the invention provides a method for detecting a tumor cell by detecting the expression of an antigen of a tumor-associated polypeptide which comprises screening tissue or cells with antibodies specific for an antigen expressed by a tumor associated polypeptide, wherein the polypeptide is selected from the group consisting of SEQ ID NO:'s 10, 12, 14, 16, 20, 24, 46, 28, 30, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 71, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 124, 126, 128, 130, 132, 134, 136, 139, 141, 143, 145, 147, 149, 151, 152, 154, 156, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 231, 233, 235, 237, 239, 241, 243, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 379, 381, 383, 385, 387, 389, 391, 393, 397, 399, 401, 403, 405,

407, 409, 411, 413 and 415. In a preferred embodiment, the invention provides a method for detecting an antigen expressed by a tumor-associated polypeptide selected from the group consisting of SEQ ID NO:s 74, 185, 187, 188 and 243.

[00021] In another embodiment, the invention provides a method for regulating the growth of a tumor cell which comprises regulating the expression of a nucleic acid selected from the group consisting of SEQ ID NO:s 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 33, 35, 37, 39, 41, 45, 47, 55, 57, 59, 61, 63, 65, 67, 69, 73, 75, 77, 79, 81, 83, 89, 91, 93, 95, 97, 99, 101, 103, 107, 109, 111, 113, 115, 117, 119, 121, 123, 127, 129, 131, 133, 135, 137, 138, 140, 142, 144, 146, 148, 150, 153, 155, 157, 158, 160, 162, 164, 166, 168, 172, 174, 176, 178, 180, 182, 184, 186, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412 and 414. In a particularly preferred embodiment, the nucleic acid sequence is selected from the group consisting of SEQ ID NO:s 73, 184, 186 and 242.

[00022] In another embodiment, the invention provides a method for regulating the growth of a tumor cell which comprises regulating the expression of a polypeptide selected from the group consisting of SEQ ID NO:s 10, 12, 14, 16, 20, 24, 46, 28, 30, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 71, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 124, 126, 128, 130, 132, 134, 136, 139, 141, 143, 145, 147, 149, 151, 152, 154, 156, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 231, 233, 235, 237, 239, 241, 243, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 379, 381, 383, 385, 387, 389, 391, 393, 397, 399, 401, 403, 405, 407, 409, 411, 413 and 415. In a preferred embodiment, the invention provides a method for detecting an antigen expressed by a tumor-associated polypeptide selected from the group consisting of SEQ ID NO:s 74, 184, 185, 187, 188 and 243.

[00023] In another embodiment, the invention provides a method for vaccinating an animal to

protect the animal from developing a tumor which comprises administering to the animal an immunogen comprising a polypeptide encoded by a nucleic acid selected from the group consisting of SEQ ID NO:'s 10, 12, 14, 16, 20, 24, 46, 28, 30, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 71, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 124, 126, 128, 130, 132, 134, 136, 139, 141, 143, 145, 147, 149, 151, 152, 154, 156, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 231, 233, 235, 237, 239, 241, 243, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 379, 381, 383, 385, 387, 389, 391, 393, 397, 399, 401, 403, 405, 407, 409, 411, 413 and 415. In a preferred embodiment, the animal is a human and the immunogen comprises a polypeptide encoded by SEQ ID NO:'s 74, 185, 187, 188 and 243.

15

#### DETAILED DESCRIPTION OF THE INVENTION

[00024] In one embodiment, the methods of the present invention can be used to classify data from original dbEST and UNIGENE databases in a table form (Baranova et al., FEBS Letters, 508, 143-148 (2001)). The HSAlyst program is one type of software program that can be used to assemble the EST sequences and clusters using the methods of the present invention. This program is available at (<http://pcn197.vigg.ru/programs/HSAlyst.exe>). In one preferred embodiment, the methods of the invention comprise the compiling of a supplemental database which contains only those sets of EST's that can specifically be associated with expression in either a particular abnormal (e.g., tumor) or normal physiological condition or tissue type. In one embodiment, the supplemental database includes EST entries from all human cDNA libraries that can specifically be classified as «tumor» or «normal» by tissue source. The supplemental database utilized in the demonstrative examples of the present invention contains a carefully checked description of each included library, cross-referenced from different data sources such as dbEST, UNIGENE and CGAP web-sites, which are available at the National Institutes of Health web site ([www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)), TIGR ([www.tigr.org](http://www.tigr.org)) and Stratagene ([www.stratagene.com](http://www.stratagene.com)). The supplemental database thus contains a classification of all cDNA libraries as either tumor or normal.



Approximately 4000 entries in the supplemental database describing cDNA sources were classified according to their origin from tumor or normal tissues (cells). In checking the libraries, those obtained from "premalignant", "non-cancerous pathology" and "immortalized cells" were not included in the supplemental database. In other embodiments, one or more databases can be utilized in the methods of the invention without modifying in a supplemental database. In the case of the databases used in the demonstrative examples presented herein, some of the libraries were considered undefined due to lack of information or ambiguity of information.

[00025] EST pre-classification in the supplemental databases for other possible tasks not described herein can be performed by users themselves

10 [00026] HSAlyst software was able to arrange EST data in the supplemental database according to any given parameter, e.g. tissue type or the number of ESTs contained in a cluster. As will readily be appreciated by persons of ordinary skill in the art, classification of ESTs according to tissue types requires verification of available database information on expression patterns and is the most time-consuming stage. Depending on the type of tissue being analyzed for global expression patterns, a specific database may contain and compare only sequences that are conclusively known to be expressed in a given cell type or physiological state. Classification of the data can be performed by many variations of software capable of handling large groups of data from the UniGene database without deviating from the scope of the present invention.

15 [00027] In one embodiment, the present invention provides a method for the detection of tumor markers wherein the CDD approach is utilized to search various publicly available databases containing human EST's. This gene-hunting procedure was inspired by the hypothesis that tumors may provide conditions for the expression of some transcribed units that are not expressed in any normal tissues. Instead of pairwise comparison of each tumor and corresponding normal tissue, a differential display of all available tumor libraries against all available normal libraries was performed.

20 [00028] A particular feature of the methods of the present invention includes subtracting all available clusters containing more than 10% of normal-derived ESTS from a whole set of the UniGene clusters to identify clusters associated with a particular phenotype, instead of pairwise comparisons of each tumor and corresponding normal tissue.

25 [00029] EST's present a particularly useful set of sequence data to analyze with the methods of the present invention. GenBank included 3,900,480 human ESTs as of November 16, 2001.

These sequences and the methods of the present invention were used to generate Table 1 discussed *infra*. UniGene includes all human ESTs clustered by homology. It should be noted that as available sequence data on EST's continues to grow, these numbers correspondingly change. The methods of the present invention will be equally applicable, however, to the evolving database resources which continue to become available for sequence analysis.

[00030] Most EST's can be traced to a certain tissue source, including tumor and normal ones. In a particularly preferred embodiment, the comparison of tumor and normal libraries is performed on a supplemental database referred to herein as "LibraryRegistry", which comprises a supplemental database that contains only those EST's that clearly are defined as originally detected in normal or tumor tissue samples, as discussed above. It can readily be appreciated by persons of ordinary skill in the art that similar methods can be employed to "customize" a database to include only sequences known to be associated with a particular phenotype or cell type and a defined set of "normal" sources which provide sequences that can be distinguished from the cell or phenotype of interest. Just as the present invention provides tumor-associated EST's and compares these to other human EST's, an example is also provided which compares EST's reported from stress-induced Arabidopsis and EST's from Arabidopsis that are not from plants exposed to the stress conditions.

[00031] A preferred embodiment of the invention utilizes a method of sequence comparison to determine tumor-associated EST's. This method is demonstrated on tumor-specific sequences but as noted is applicable to any well-described database which provides information on the origin of nucleic acid sequences contained therein. In the first step, a database of clustered EST sequences containing a description of the source for each of the sequences is selected for analysis. In the second step, for each cluster the number of its ESTs is retrieved from the cluster description. Next, the number of ESTs from the "tumor" cDNA libraries is counted. The whole range of possible EST numbers is dissected into sub ranges. The arrangement of sub ranges can be performed exponentially (e.g., sub ranges with exponents 1-2, 3-4, 5-8, 9-16) or linearly (sub ranges with factors 1-10, 11-20, 21-30). Simultaneously, the tumor ESTs/all ESTs percentage is calculated for each cluster and those clusters which exceed a user-defined bottom threshold value for the percentage of tumor ESTs/all ESTs are listed in the output file as tumor specific clusters.

[00032] The subranges can be arranged exponentially (e.g., sub ranges with exponents 1-2, 3-4, 5-8, 9-16) or linearly (sub ranges e.g. with factors 1-10, 11-20, 21-30). Classification of subranges into linear or logarithmic format provides two complementary ways for statistical

estimation of a threshold level for determining whether a cluster is associated with a particular phenotype. Using the methods of the present invention, arrangement of subranges produced successful detection of tumor-associated markers whether subranges were arranged linearly as in Table 1 or logarithmically. Program output is designed to separate information about each set of clusters of the same size. In general it is possible to choose some intervals within the whole range of cluster sizes (cluster "size" is the number of EST's in a cluster). For example, if one needs the detailed picture of tumor clusters distribution it may be useful to choose narrow intervals, even assigning a cluster to as little as 1 EST sequence. For each interval the following values are calculated: total number of ESTs contained in clusters of the size within the interval  $N_{EST}$ , total number of these clusters  $N_{clust}$  and the number of tumor related clusters  $N_{tum}$  within this interval. Tumor related clusters that have relative content of tumor tissue-derived ESTs over the threshold denoted as « $t$ » given by user (usually from 90% to 100%). Also, the theoretically expected number of tumor clusters within this interval is calculated. To let a computer program do this, the user must input the expected content  $p$  of tumor-related ESTs in the whole database. Given the  $N_{EST}$  and  $N_{clust}$  for the interval it is assumed that tumor cluster distribution is binomial so the expected number of tumor clusters is  $N_{tum} = N_{clust} * \sum C_m^n p^m (1-p)^{n-m}$  where  $p$  is mean tumor ESTs content in database (declared by user). The sum in the brackets is calculated for each  $m$ :  $n * t < m < n$ , where  $n$  varies between the interval edges and represents the hypothetical cluster size. The 90-100% threshold range described above for cell type-associated clusters in humans is for the case of human tumor-associated EST's but this number can vary depending on the difference between the expected number of clusters at a given  $t$  for a cluster size versus the observed number of clusters at a given  $t$  for the cluster size.

[00033] In an exemplary analysis using the methods of the present invention, the database LibraryRegistry was analyzed. This library provided a database of EST's from human normal and tumor sources. The EST's were placed in clusters based on homology; for each cluster the total number of EST's within the cluster was determined, the clusters were then ordered sequentially based on the number of EST's in each cluster and divided into subranges linearly based on the number of EST's per cluster as shown in Table 1. For each cluster subrange obtained the number EST's within said cluster expressed in tumor cells was determined. Next, based on a normal distribution, the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in tumor cells was calculated, wherein the threshold percentage was

calculated at 90% and 100%. The number of clusters in each subrange observed to contain 90% or 100% tumor-specific EST's was determined. Next, subranges having an observed number of clusters that meet said predetermined threshold percentage five times greater than the number of clusters expected to meet said predetermined threshold for the subrange according to normal distribution were noted. Clusters in the subranges between 17 and 2048 were determined to contain 5 times or greater the number of expected clusters having 90% or more tumor-derived EST's in the cluster subrange were identified. These clusters were then associated with the corresponding Hs. Identifying number from the Unigene database to determine the nucleic acid sequences which were tumor-associated sequences.

10 [00034] To be sure that what was found was a "true" tumor-associated cluster not generated by chance among the total number of EST clusters classified with the methods of the present invention, the theoretical number of "tumor" clusters for every sub range is calculated. This is done utilizing an underlying model of a unimodal binomial distribution with the mean value of "tumor/all" percentage that can be defined by the user (0 to 100%). This binomial method is used to determine the expected number of tumor/all for predetermined thresholds for each cluster size based on the proportion of EST's from tumor cells in the database. In the example described in Table 1, the subranges which were analyzed for 90% or more tumor derived EST's were subranges that contained at least five times more such clusters than expected for the cluster size. This ratio of observed to expected has been found by the inventors to be reliable for determining phenotype or cell type associated clusters utilizing databases from Arabidopsis, human and mouse. It will readily be appreciated by persons of ordinary skill in the art that other ratios of observed/expected clusters for a predetermined threshold will also be useful. As little as 3.5 times the number of observed/expected clusters equal to or greater than the threshold range are also contemplated. Clusters between 3.5 and 5 times the number of expected clusters may also identify useful subranges displaying the predetermined threshold percentage of sequences for a cluster. Alternatively, an observed number of clusters for subrange that is at least one standard deviation greater than the number of clusters expected for a subrange may also be used to identify useful subranges displaying the predetermined threshold percentage of sequences for a cluster.

25 [00035] Referring now to Table I, the expected numbers of tumor-specific clusters that exceeded threshold values were calculated for a UniGene database of human EST's that was available on November 6, 2001. A comparison between the expected and observed tumor-derived

EST's demonstrated that tumor-related clusters were not accidental but represented a natural phenomenon. In this example, user-derived threshold values for the percentage of tumor-derived EST's to all EST's were at least 90% tumor-derived EST's per cluster and 100% tumor-derived EST's per cluster. When at least 90% of the EST's in a cluster are tumor derived, the cluster is referred to as tumor-associated. Each cluster was identified with a representative nucleic acid sequence based on the Hs. number for the sequence and the representative longest nucleotide sequence or defined mRNA sequence associated with the cluster.

[00036] Referring now to Table II, there are shown the results of tumor-related clusters detected with the methods of the present invention on a Unigene database that was assembled May 3, 2002. Except for the methods otherwise noted, the methods used to determine markers for tumors were as described for Table II. All of the tumor associated clusters in Table II had a number of EST's per cluster of 10 or more, which was found to be a significant number of EST's that would be tumor-associated using the methods described herein for identifying subranges having an observed number of clusters that was five times more than the expected number of clusters that met a predetermined threshold of 90% or more tumor derived sequences. Among the 196 tumor related clusters detected, 93 are non-coding and 103 encode at least one polypeptide sequence. Among clusters encoding a polypeptide, six correspond to known genes previously described as tumor markers/antigens, as indicated in Table 2.

[00037] Differentially expressed EST clusters are useful as markers for a physiological state or phenotype and prognostic indicators and may be suitable targets for various therapeutic interventions. Therapeutic interventions can include use of various gene therapy techniques to regulate the expression of the sequences, target-associated antibodies to inhibit growth of cells expressing phenotype associated marker polypeptides, and use of marker polypeptides as immunogens to vaccinate an animal against cells expressing the marker.

[00038] Useful diagnostic techniques include, but are not limited to fluorescent in situ hybridization (FISH), direct DNA sequencing, PFGE analysis, Southern blot analysis, single stranded conformation analysis (SSCA), RNase protection assay, allele-specific oligonucleotide (ASO), dot blot analysis and PCR-SSCP, as discussed in detail further below. Also useful is the recently developed technique of DNA microchip technology.

[00039] "Antibodies." The present invention also provides polyclonal and/or monoclonal antibodies and fragments thereof, and immunologic binding equivalents thereof, which are capable

of specifically binding to the tumor-associated polypeptides and fragments thereof or to polynucleotide sequences from the tumor-associated region, particularly from the tumor-associated locus or a portion thereof. The term "antibody" is used both to refer to a homogeneous molecular entity, or a mixture such as a serum product made up of a plurality of different molecular entities.

5 Antibodies to the tumor-associated markers will be useful in assays as well as pharmaceuticals.

[00040] As used herein, the term "computer" is meant to refer to at least one computer but can also include more than one computer connected by any means known in the art of computer science. Furthermore, the term is also meant to include a computer interacting with a remote computer or other server which provides access to a plurality of databases via the world wide web.

10 In one embodiment, the analysis of EST clusters is performed on software on a computer, while the information imported to the computer for correlation is obtained from contact with the world wide web.

[00041] Alteration of mRNA expression for the tumor markers of the present invention can be detected by any techniques known in the art. These include Northern blot analysis, PCR  
15 amplification and RNase protection. Alteration of expression of tumor-associated genes can also be detected by screening for alteration of the expression of the protein encoded by a tumor-associated gene. For example, monoclonal antibodies immunoreactive with a marker polypeptide can be used to screen a tissue using methods known in the art. These include Western blots, immunohistochemical assays and ELISA assays. Functional assays, such as protein binding  
20 determinations, can be used and assays biochemical function of a tumor-associated marker can be employed.

[00042] Genes or gene products can also be detected in human body samples, such as serum, stool, urine and sputum and isolated tumor tissue. The same techniques discussed above for detection of genes or gene products in tissues can be applied to other body samples. Cancer cells are  
25 sloughed off from tumors and appear in such body samples. In addition, the gene product itself may be secreted into the extracellular space and found in these body samples even in the absence of cancer cells. By screening such body samples, a simple early diagnosis can be achieved for many types of cancers. In addition, the progress of chemotherapy or radiotherapy can be monitored more easily by testing such body samples for genes or gene products. The diagnostic methods of the  
30 present invention is useful for clinicians, so they can decide upon an appropriate course of treatment.

[00043] Pairs of single-stranded DNA primers can be annealed to sequences within or surrounding a tumor-associated gene in order to prime amplifying DNA synthesis of the gene itself. A complete set of these primers allows synthesis of all of the nucleotides of the gene coding sequences, i.e., the exons. The set of primers preferably allows synthesis of both intron and exon sequences. The primers themselves can be synthesized using techniques which are well known in the art. Generally, the primers can be made using oligonucleotide synthesizing machines which are commercially available. Given the sequences of the tumor associated genes of the invention, design of particular primers is well within the skill of the art.

5 [00044] The nucleic acid probes provided by the present invention are useful for a number of purposes. They can be used as probes to detect PCR amplification products derived from the mRNA of the gene or to detect actual mRNA transcripts directly in tumors or other cells being analyzed for expression of tumor-associated markers.

[00045] "Probes". Polynucleotide probes form a stable hybrid with a of the target sequence, under highly stringent to moderately stringent hybridization and wash conditions. If it is expected that the probes will be perfectly complementary to the target sequence, high stringency conditions will be used. Hybridization stringency may be lessened if some mismatching is expected, for example, if variants are expected with the result that the probe will not be completely complementary. Conditions are chosen which rule out nonspecific/adventitious bindings, that is, which minimize noise. In general, hybridizations conditions will be stringent conditions.

20 [00046] Probes for the tumor-associated markers may be derived from the sequences of the region or its cDNAs. The probes may be of any suitable length, which span all or a portion of the marker, and which allow specific hybridization to the transcripts expressed from the marker. If the target sequence contains a sequence identical to that of the probe, the probes may be short, e.g., in the range of about 8-30 base pairs, since the hybrid will be relatively stable under even highly stringent conditions. If some degree of mismatch is expected with the probe, i.e., if it is suspected that the probe will hybridize to a variant region, a longer probe may be employed which hybridizes to the target sequence with the requisite specificity.

[00047] The probes may include an isolated polynucleotide attached to a label or reporter molecule and may be used to isolate other polynucleotide sequences, having sequence similarity by standard methods. Other similar polynucleotides may be selected by using homologous polynucleotides. Alternatively, polynucleotides encoding these or similar polypeptides may be

30

synthesized or selected by use of the redundancy in the genetic code. Various codon substitutions may be introduced, e.g., by silent changes (thereby producing various restriction sites) or to optimize expression for a particular system.

[00048] Probes comprising synthetic oligonucleotides or other polynucleotides of the present invention may be derived from naturally occurring or recombinant single- or double-stranded polynucleotides, or be chemically synthesized. Probes may also be labeled by nick translation, Klenow fill-in reaction, or other methods known in the art.

[00049] Portions of the polynucleotide sequence having at least about eight nucleotides, usually at least about 15 nucleotides, and fewer than about 6 kb, usually fewer than about 1.0 kb, from a polynucleotide sequence encoding the tumor associated markers of the invention are preferred as probes. Thus, this definition includes probes of 8, 12, 15, 20, 25, 40, 60, 80, 100, 200, 300, 400 or 500 nucleotides or probes having any number of nucleotides within these ranges of values (e.g., 9, 10, 11, 16, 23, 30, 38, 50, 72, 121, etc., nucleotides), or probes having more than 500 nucleotides. The probes may also be used to determine whether mRNA encoding a tumor-associated marker is present in a cell or tissue. The present invention contemplates the use of probes having at least 8 nucleotides derived from a tumor-associated marker of the invention and any combination of these sequences as described in further detail below, its complement or functionally equivalent nucleic acid sequences.

[00050] Similar considerations and nucleotide lengths are also applicable to primers which may be used for the amplification of all or part of the tumor-associated markers of the invention. Thus, a definition for primers includes primers of 8, 12, 15, 20, 25, 40, 60, 80, 100, 200, 300, 400, 500 nucleotides, or primers having any number of nucleotides within these ranges of values (e.g., 9, 10, 11, 16, 23, 30, 38, 50, 72, 121, etc. nucleotides), or primers having more than 500 nucleotides, or any number of nucleotides between 500 and 9000. The primers may also be used to determine whether mRNA encoding a tumor-associated marker is present in a cell or tissue.

[00051] Nucleic acid hybridization will be affected by such conditions as salt concentration, temperature, or organic solvents, in addition to the base composition, length of the complementary strands, and the number of nucleotide base mismatches between the hybridizing nucleic acids, as will be readily appreciated by those skilled in the art. Stringent temperature conditions will generally include temperatures in excess of 30°C, typically in excess of 37°C, and preferably in



excess of 45°C. Stringent salt conditions will ordinarily be less than 1000 mM, typically less than 500 mM, and preferably less than 200 mM. However, the combination of parameters is much more important than the measure of any single parameter.

[00052] Probe sequences may also hybridize specifically to duplex DNA under certain conditions to form triplex or other higher order DNA complexes. The preparation of such probes and suitable hybridization conditions are well known in the art.

#### Methods of Use: Nucleic Acid Diagnosis and Diagnostic Kits

[00053] In order to detect the presence of neoplasia, the progression toward malignancy of a precursor lesion, or as a prognostic indicator, a biological sample of the lesion is prepared and analyzed for the presence or absence of the expression of a tumor-associated marker. Results of these tests and interpretive information are returned to the health care provider for communication to the tested individual. Such diagnoses may be performed by diagnostic laboratories, or, alternatively, diagnostic kits are manufactured and sold to health care providers or to private individuals for self-diagnosis.

[00054] Initially, the screening method may involve amplification of the relevant sequences. In another preferred embodiment of the invention, the screening method involves a non-PCR based strategy. Both PCR and non-PCR based screening strategies can detect target sequences with a high level of sensitivity.

[00055] The most popular method used today is target amplification. Here, the target nucleic acid sequence is amplified with polymerases. One particularly preferred method using polymerase-driven amplification is the polymerase chain reaction (PCR). The polymerase chain reaction and other polymerase-driven amplification assays can achieve over a million-fold increase in copy number through the use of polymerase-driven amplification cycles. Once amplified, the resulting nucleic acid can be sequenced or used as a substrate for DNA probes.

[00056] When the probes are used to detect the presence of the target sequences, the biological sample to be analyzed, such as blood or serum, may be treated, if desired, to extract the nucleic acids. The sample nucleic acid may be prepared in various ways to facilitate detection of the target sequence; e.g. denaturation, restriction digestion, electrophoresis or dot blotting. The targeted region of the analyte nucleic acid usually must be at least partially single-stranded to form hybrids with the targeting sequence of the probe. If the sequence is naturally single-stranded, denaturation will not be required. However, if the sequence is double-stranded, the sequence will

probably need to be denatured. Denaturation can be carried out by various techniques known in the art.

[00057] Analyte nucleic acid and probe are incubated under conditions which promote stable hybrid formation of the target sequence in the probe with the putative targeted sequence in the analyte. The region of the probes which is used to bind to the analyte can be made completely complementary to a targeted region. Therefore, high stringency conditions are desirable in order to prevent false positives. However, conditions of high stringency are used only if the probes are complementary to regions of the chromosome which are unique in the genome. The stringency of hybridization is determined by a number of factors during hybridization and during the washing procedure, including temperature, ionic strength, base composition, probe length, and concentration of formamide. Under certain circumstances, the formation of higher order hybrids, such as triplexes, quadraplexes, etc., may be desired to provide the means of binding target sequences.

[00058] Detection, if any, of the resulting hybrid is usually accomplished by the use of labeled probes. Alternatively, the probe may be unlabeled, but may be detectable by specific binding with a ligand which is labeled, either directly or indirectly. Suitable labels, and methods for labeling probes and ligands are known in the art, and include, for example, radioactive labels which may be incorporated by known methods (e.g., nick translation, random priming or kinasing), biotin, fluorescent groups, chemiluminescent groups (e.g., dioxetanes, particularly triggered dioxetanes), enzymes, antibodies and the like. Variations of this basic scheme are known in the art, and include those variations that facilitate separation of the hybrids to be detected from extraneous materials and/or that amplify the signal from the labeled moiety. A number of these variations are reviewed in e.g., U.S. Patent 4,868,105, and in EPO Publication No. 225,807.

[00059] Once a sufficient quantity of desired tumor-associated polypeptide has been obtained, it may be used for various purposes. A typical use is the production of antibodies specific for binding. These antibodies may be either polyclonal or monoclonal, and may be produced by in vitro or in vivo techniques well known in the art. For production of polyclonal antibodies, an appropriate target immune system, typically mouse or rabbit, is selected. Substantially purified antigen is presented to the immune system in a fashion determined by methods appropriate for the animal and by other parameters well known to immunologists. Typical sites for injection are in footpads, intramuscularly, intraperitoneally, or intradermally. Of course, other species may be substituted for mouse or rabbit. Polyclonal antibodies are then purified using techniques known in

the art, adjusted for the desired specificity.

[00060] An immunological response is usually assayed with an immunoassay. Normally, such immunoassays involve some purification of a source of antigen, for example, that produced by the same cells and in the same fashion as the antigen. A variety of immunoassay methods are well known in the art.

[00061] Monoclonal antibodies with affinities of  $10^{-8}$  M<sup>-1</sup> or preferably  $10^{-9}$  to  $10^{-10}$  M<sup>-1</sup> or stronger will typically be made by standard procedures. Briefly, appropriate animals will be selected and the desired immunization protocol followed. After the appropriate period of time, the spleens of such animals are excised and individual spleen cells fused, typically, to immortalized myeloma cells under appropriate selection conditions. Thereafter, the cells are clonally separated and the supernatants of each clone tested for their production of an appropriate antibody specific for the desired region of the antigen.

[00062] Other suitable techniques involve in vitro exposure of lymphocytes to the antigenic polypeptides, or alternatively, to selection of libraries of antibodies in phage or similar vectors. The polypeptides and antibodies of the present invention may be used with or without modification. Frequently, polypeptides and antibodies will be labeled by joining, either covalently or non-covalently, a substance which provides for a detectable signal. A wide variety of labels and conjugation techniques are known and are reported extensively in both the scientific and patent literature. Suitable labels include radionuclides, enzymes, substrates, cofactors, inhibitors, fluorescent agents, chemiluminescent agents, magnetic particles and the like. Patents teaching the use of such labels include U.S. Patents 3,817,837; 3,850,752; 3,939,350; 3,996,345; 4,277,437; 4,275,149 and 4,366,241. Also, recombinant immunoglobulins may be produced (see U.S. Patent 4,816,567).

#### Methods of Use: Peptide Diagnosis and Diagnostic Kits

[00063] Antibodies (polyclonal or monoclonal) may be used to detect the presence or absence of peptides encoded by tumor-associated markers of the invention. Techniques for raising and purifying antibodies are well known in the art and any such techniques may be chosen to achieve the preparations claimed in this invention. In a preferred embodiment of the invention, antibodies will immunoprecipitate proteins from solution as well as react with proteins on Western or immunoblots of polyacrylamide gels. In another preferred embodiment, antibodies will detect tumor-associated proteins in paraffin or frozen tissue sections, using immunocytochemical

techniques. Antibodies specific to tumor-associated markers described herein can be employed in conjunction with toxic products that can be bound to the antibodies and selectively delivered to tumor cells via binding of the antibody with the tumor-associated polypeptide present on or in the tumor cell utilizing techniques well known in the art.

- 5 [00064] Preferred embodiments relating to methods for detecting tumor-associated proteins include enzyme linked immunosorbent assays (ELISA), radioimmunoassays (RIA), immunoradiometric assays (IRMA) and immunoenzymatic assays (IEMA), including sandwich assays using monoclonal and/or polyclonal antibodies. Exemplary sandwich assays are described by David et al. in U.S. Patent Nos. 4,376,110 and 4,486,530.

10 Methods of Use: Antisense and siRNA Therapy

- [00065] The present invention contemplates an antisense polynucleotide up to about 50 nucleotides in length that hybridizes with mRNA molecules that encode a tumor-associated polypeptide, and the use of one or more of those polynucleotides in treating cancer cells. See U.S. Patent Nos. 5,891,858 and 5,885,970, incorporated herein by reference, for further details. The  
15 antisense polynucleotide or siRNA is useful for treating cancer caused by expression of a tumor-specific or tumor-associated polypeptide. In a similar manner, siRNA molecules specific for tumor-associated nucleic acid markers of the invention can also be used to suppress transcription of said marker sequences.

- [00066] In one embodiment an antisense polynucleotide or siRNA is contacted with a cancer  
20 cell. The contact is carried out in vivo in a host animal, and contact is effected by administration to the animal of a pharmaceutical composition containing the polynucleotide dissolved or dispersed in a physiologically tolerable diluent so that a body fluid such as blood or lymph provides at least a portion of the aqueous medium. In vivo contact is maintained until the polynucleotide is eliminated from the mammal's body by a normal bodily function such as excretion in the urine or feces or  
25 enzymatic breakdown. The polynucleotide may be injected directly into the tumor in an aqueous medium (an aqueous composition) via a needle or other injecting means and the composition is injected throughout the tumor as compared to being injected in a bolus. For example, an aqueous composition containing an antisense polynucleotide or siRNA, the inverts or mixtures thereof is injected into tumors via a needle. The needle is placed in the tumors and withdrawn while  
30 expressing the aqueous composition within the tumor. That mode of administration is carried out in three approximately orthogonal planes in the tumors.

[00067] This administration technique has the advantages of delivering the polynucleotide directly to the site of action and avoids most of the usual body mechanisms for clearing drugs.

Tumors can be located using *e.g.*, modern imaging techniques such as X-ray, ultrasound and MRI so that exact placement of the polynucleotide can be carried out.

5 [00068] A polynucleotide can also be administered in the form of liposomes. As is shown in the art, liposomes are generally derived from phospholipids or other lipid substances. Liposomes are formed by mono or multi-lamellar hydrated liquid crystals that are dispersed in an aqueous medium. Any non-toxic, physiologically acceptable and metabolizable lipid capable of forming liposomes can be used. The present compositions in liposome form can contain stabilizers, preservatives,  
10 excipients, and the like in addition to the agent.

[00069] An antisense polynucleotide or siRNA can also be administered by gene therapy. The polynucleotide may be introduced into the cell in a vector such that the polynucleotide remains extrachromosomal. In such a situation, the polynucleotide will be expressed by the cell from the extrachromosomal location. Vectors for introduction of polynucleotides for extrachromosomal  
15 maintenance are known in the art, and any suitable vector may be used. Methods for introducing DNA into cells such as electroporation, calcium phosphate coprecipitation and viral transduction are known in the art, and the choice of method is within the competence of a person of ordinary skill in the art.

[00070] The antisense polynucleotide or siRNA, may be employed in gene therapy methods  
20 in order to decrease the amount of the expression products in cancer cells, especially in those cases where overexpressed. Such gene therapy is particularly appropriate for use in both cancerous and pre-cancerous cells.

[00071] Gene therapy would be carried out according to generally accepted methods, for example, as described in further detail in U.S. Patent No. 5,747,282 and references cited therein, all  
25 incorporated by reference herein. Expression vectors in the context of gene therapy are meant to include those constructs containing sequences sufficient to express a polynucleotide that has been cloned therein. In viral expression vectors, the construct contains viral sequences sufficient to support packaging of the construct. If the polynucleotide encodes an antisense polynucleotide or siRNA or a ribozyme, expression will produce the antisense polynucleotide or siRNA or ribozyme.  
30 Thus in this context, expression does not require that a protein product be synthesized. In addition to the polynucleotide cloned into the expression vector, the vector also contains a promoter

functional in eukaryotic cells. The cloned polynucleotide sequence is under control of this promoter. Suitable eukaryotic promoters include those described above. The expression vector may also include sequences, such as selectable markers and other sequences conventionally used.

[00072] Gene transfer techniques which target DNA directly to specific tumor cell types are preferred. Receptor-mediated gene transfer, for example, is accomplished by the conjugation of DNA (usually in the form of covalently closed supercoiled plasmid) to a protein ligand via polylysine. Ligands are chosen on the basis of the presence of the corresponding ligand receptors on the cell surface of the target cell/tissue type. These ligand-DNA conjugates can be injected directly into the blood if desired and are directed to the target tissue where receptor binding and internalization of the DNA-protein complex occurs. To overcome the problem of intracellular destruction of DNA, coinfection with adenovirus can be included to disrupt endosome function.

Methods of Use: Transformed Hosts; Transgenic/Knockout Animals and Models

[00073] In one embodiment of the invention, a transgene is introduced into a non-human host to produce a transgenic animal expressing a human or murine tumor-specific or tumor-associated gene. The transgenic animal is produced by the integration of the transgene into the genome in a manner that permits the expression of the transgene. Methods for producing transgenic animals are generally described e.g., in U.S. Patent No. 4,873,191.

[00074] Transgenic animals may be produced from the fertilized eggs from a number of animals including, but not limited to reptiles, amphibians, birds, mammals, and fish. Within a particularly preferred embodiment, transgenic mice are generated which overexpress the polypeptide. Alternatively, the absence of the polypeptide in «knock-out» mice permits the study of the effects that loss of protein has on a cell in vivo. Knock-out mice also provide a model for the development of cancers.

[00075] Methods for producing knockout animals have been described previously. The production of conditional knockout animals, in which the gene is active until knocked out at the desired time is also known by those of ordinary skill in the art.

[00076] As noted above, transgenic animals and cell lines derived from such animals may find use in certain testing experiments. In this regard, transgenic animals and cell lines capable of expressing a tumor-specific or tumor-associated gene may be exposed to test substances. These test substances can be screened for the ability to reduce overexpression of the gene or impair the expression or function of a protein encoded by the gene.

[00077] In another embodiment, the invention provides a method for assaying expression of EST's utilizing microarrays comprising antibodies to the tumor-associated EST's of the invention.

[00078] In another embodiment, the invention provides a method for assaying for tumor EST's utilizing microarrays containing polypeptides or fragments thereof encoded and expressed by the tumor-associated EST's of the invention.

[00079] In another embodiment, the invention provides a method for assaying for tumor-associated EST's utilizing microarrays comprising nucleic acids specific for the tumor-related EST's of the invention.

[00080] The newly developed technique of nucleic acid analysis via microchip technology is also applicable to the present invention. In this technique, literally thousands of distinct oligonucleotide probes are built up in an array on a silicon chip. Nucleic acid to be analyzed is fluorescently labeled and hybridized to the probes on the chip. It is also possible to study nucleic acid-protein interactions using these nucleic acid microchips. Using this technique one can determine the presence of a sequence or expression levels of a gene of interest. The method is one of parallel processing of many, even thousands, of probes at once and can tremendously increase the rate of analysis.

[00081] It is also known in to persons of ordinary skill in the art that microchip technology is applicable to screening large numbers of samples by detecting antibody/antigen interactions. Utilizing cell type specific transcripts detected with the methods of the present invention, large numbers of cells from different stages of expression can be screened for expression of antigens. For a general description, see e.g., U.S. patent No. 6,379,895.

[00082] The nucleic acid, protein or antibody to the protein encoded by the nucleic acid may also be incorporated on a microarray. The preparation and use of microarrays are well known in the art. Generally, the microarray may contain the entire nucleic acid or protein, or it may contain one or more fragments of the nucleic acid or protein. Similarly, the microarray may contain an antibody or only the portion of the antibody necessary for binding antigen. It is contemplated by the invention that single chain antibodies may be utilized in the detection of tumor antigen or portions thereof. Suitable nucleic acid fragments may include at least 17 nucleotides, at least 21 nucleotides, at least 30 nucleotides or at least 50 nucleotides of the nucleic acid sequence, particularly where the nucleic acid marker comprises a coding sequence. Suitable protein fragments may include at least 4

amino acids, at least 8 amino acids, at least 12 amino acids, at least 15 amino acids, at least 17 amino acids or at least 20 amino acids.

[00083] In another embodiment, the invention provides methods for vaccinating an animal with tumor-associated polypeptides of the invention as an immunogen. A method of vaccination can comprise administering at least a fragment of a polypeptide encoded by the tumor-associated markers of the present invention. Methods for the administration of such fragments of a peptide are known to a person of ordinary skill in the art and can include administering additional peptide sequences as an adjuvant. In a preferred embodiment, the peptides are administered under conditions which will elicit a cytotoxic T-cell response to a tumor expressing a tumor-associated marker described in the present invention.

[00084] Cytotoxic T Lymphocytes (CTL) are an important means by which a mammalian organism defends itself against cancer. Functional studies of viral and tumor-associated T cells have confirmed that a minimal cytotoxic epitope consisting of a peptide of 8-12 amino acids can prime an antigen presenting cell to be lysed by CD8<sup>+</sup> CTL, as long as the antigen presenting cell presents the epitope in the context of the correct MHC molecule. It is contemplated that the immunogen may comprise a minimal cytotoxic epitope on the tumor marker polypeptide. Minimal cytotoxic epitopes generally have been most effective when administered in the form of a lipidated peptide together with a helper CD4 epitope. Peptides administered alone, however, also can be highly effective.

[00085] As used herein, the singular form "a", "an", "said" and "the" include plural references unless the context clearly indicates otherwise. For example, a reference to a "cell" would include a plurality of cells.

[00086] As used herein, the terms "diagnosing" or "prognosing," as used in the context of neoplasia, are used to indicate 1) the classification of lesions as neoplasia, 2) the determination of the severity of the neoplasia, or 3) the monitoring of the disease progression, prior to, during and after treatment.

[00087] "Encode". A polynucleotide is said to "encode" a polypeptide if, in its native state or when manipulated by methods well known to those skilled in the art, it can be transcribed and/or translated to produce the mRNA for and/or the polypeptide or a fragment thereof. The anti-sense strand is the complement of such a nucleic acid, and the encoding sequence can be deduced therefrom.



[00088] "Isolated" or "substantially pure". An "isolated" or "substantially pure" nucleic acid (e.g., an RNA, DNA or a mixed polymer) is one which is substantially separated from other cellular components which naturally accompany a native human sequence or protein, e.g., ribosomes, polymerases, many other human genome sequences and proteins. The term embraces a nucleic acid sequence or protein which has been removed from its naturally occurring environment, and includes recombinant or cloned DNA isolates and chemically synthesized analogs or analogs biologically synthesized by heterologous systems.

[00089] As used herein, the terms "tumor-associated marker" and "stress-associated marker" are meant to include nucleic acids or fragments thereof and polypeptides or fragments thereof that are specifically disclosed herein as associated with the indicated phenotype, as well as other nucleic acids or polypeptides or fragments thereof that comprise said polypeptides and nucleic acids and fragments thereof that can be detected with the methods of the present invention and are not known in the prior art to be associated with the particular phenotype.

[00090] As used herein, phenotype associated "marker expression" is meant to include the expression of all or a fragment of a specific (e.g., tumor-specific) or associated (e.g., tumor-associated) marker. Thus, as will be recognized by those of ordinary skill in the art, detection of marker expression is meant to include all known methods for detecting of gene expression, including but not limited to e.g., detecting the expression of an mRNA or fragment thereof (e.g., an EST) for the marker or detecting the expression of a polypeptide or fragment thereof encoded by a tumor associated marker of the invention. Polypeptide or fragments thereof can be detected by antibodies which specifically bind to the polypeptide or fragment thereof and allow its detection in various assay as known in the art such as Western blots, ELISA and the like.

[00091] The practice of the present invention employs, unless otherwise indicated, conventional techniques of chemistry, molecular biology, microbiology, recombinant DNA, genetics, immunology, cell biology, cell culture and transgenic biology, which are within the skill of the art.

### General Methods

[00092] **MTC panels.** We used CLONTECH Multiple Tissue cDNA (MTC™) panels, which contain sets of normalized first-strand cDNA generated using CLONTECH Premium RNA™ from different human tumors and normal tissues. These tissue-specific first strand cDNA's were used as

templates in conjunction with tissue-specific tumor EST-derived primers in PCR studies to determine if tumor-associated EST's detected with the methods of the present invention were The following panels were used: Human Tumor MTC Panel (K1422-1), Human MTC Panel I (K1420-1), Human MTC Panel II (K1421-1), Human Immune System MTC Panel (K1426-1), and Human Fetal MTC Panel (K1425-1).

[00093] **PCR analysis.** PCR of genomic DNA was carried out in 25 $\mu$ l of the following reaction mixture: 67mM Tris-HCl (pH 8.9), 4mM MgCl<sub>2</sub>, 16mM (NH<sub>4</sub>)SO<sub>4</sub>, 10mM 2-mercaptoethanol, 0.1 mg/ml BSA, 200  $\mu$ M (each) dNTP, specific forward and reverse primers (10 pmol each), 2.5U Taq polymerase, and 500 ng of genomic DNA. The samples were incubated in a PTC-200 thermocycler (MJ Research, USA) for the total of 35 cycles. Each cycle consisted of 30 s at 95°C, 30 s at 56°C for forw/rev16 or at 58°C for forw/rev8, forw/rev19, and forw/rev28, and 1 min at 72°C. DNA primers for PCR sequencing and the size of fragments generated for each cluster sequence were as follows:

Hs.154173:

15 forward16: (SEQ ID NO:1) 5'-TCT TTC TTG ATG AAT TAT CTT ATG-3'; reverse16: (SEQ ID NO:2) 5'-ACA CAC CCT CAT TCC CGC-3'; fragment size: 443 bp.

Hs. 133294:

forward8: (SEQ ID NO:3) 5'-GTC AAC CTT CTC ATC TTC CTC-3'; reverse8: (SEQ ID NO:4) 5'-CAG GAA GTT GGG TAGATG TG-3'; fragment size: 1) 412 bp fragment size: 2) 1084 bp.

20 Hs. 67624:

forward19:(SEQ ID NO:5) 5'-TAA TTG CAT TCT TCA AAA TTC TAC-3';  
reverse19: (SEQ ID NO:6) 5'-GCT TCG CAC CAT TGAATA AAC-3'; fragment size: 315 bp.

Hs.133107:

forward 28: (SEQ ID NO:7) 5'-TAC ATA GTT GTT ATC TTA AGG TG-3';

25 reverse 28: (SEQ ID NO:8) 5'-TGG GAA TTC TAT ACT TTT GAC-3'; fragment size: 344 bp.

[00094] The expression of nucleotide sequences under study was analyzed in different tissues using CLONTECH cDNA panels and Titanium Taq PCR kit ( K1915-I). Reaction mixtures of a 25- $\mu$ l volume were prepared according to the manufacturer's instructions for cDNA panels. PCR was carried out under the following conditions: 1 min at 95°C, 35 cycles consisting of 30 s at 95°C, 30 s at 56°C, for forw/rev16 or at 58°C, for forw/rev8, forw/rev19, or forw/rev28, and. 1 min at 68°C. The terminal stage of the reaction was 5 min at 68°C.

[00095]       **Electrophoresis.** The amplification products were separated by electrophoresis in 2% agarose gel and detected by staining with ethidium bromide. 8 $\mu$ l of PCR mixture was taken per lane.

[00096]       **Computer programs.** Homology searches were performed using BLAST computer  
5 programs on a NCBI server ([www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)). Exon-intron boundaries and putative gene elements were predicted using program tools using techniques well known in the art and described in detail for example at the WebGene server (<http://www.itba.mi.cnr.it/webgene/>) and on the search engine of Baylor College of Medicine. (<http://kiwi.imgen.bcm.tmc.edu:8088/search-launcher/launcher.html>).

10 Determination of exon-intron boundaries are indicative of genes as transcribed genomic units producing pre-mRNA spliced during RNA maturation.

[00097]       The present invention is described by reference to the following Examples, which are offered by way of illustration and are not intended to limit the invention in any manner. Standard techniques well known by persons of ordinary skill in the art and/or the techniques specifically  
15 described herein were utilized.

#### EXAMPLE 1

[00098]       Utilizing publicly available EST sequence data and HSAlyst, available clusters were organized into the ranges shown in Table 1. The software utilized in this example made  
20 possible the arrangement of sub ranges exponentially (e.g., sub ranges with exponents 1-2, 3-4, 5-8, 9-16) or linearly (sub ranges with factors 1-10, 11-20, 21-30). In this Example, the sub ranges were arranged linearly. Totally, 2681 libraries were classified as "tumor" libraries, while 1087 libraries were classified as "normal". The supplemental database resulting from this differential comparison contained 921,237 "tumor" ESTs and 810,097 "normal" ESTs. Of these, 83 EST clusters were  
25 identified as putative tumor markers, possessing a percentage of tumor-specific EST's/total EST's of at least 90%. The classes of tumor related EST clusters revealed by the methods of the present invention were further classified into five distinct categories based on information provided about the sequences in the public databases, as detailed below in Tables 3-6. The clusters found to be tumor related included non-coding mRNAs, non-coding mRNAs with strict tumor specific  
30 expression, genes that encode proteins with weak homology to known proteins (as used herein, "weak refers to statistically significant homology that is not indicative of function or inclusion in

the same gene family), genes that encode known proteins and genes that encode known proteins with a tumor associated expression. In some instances, EST clusters are tumor specific, not being expressed in the normal EST libraries. In other instances, the tumor EST's detected are tumor related, i.e., expressed at significantly higher levels in tumor cells versus normal cell sources. Table 1 represents an analysis of the number of tumor-associated EST's observed with the methods of the present invention.

Table I

Sub-range of # of EST's per cluster	EST number		Tumor specific EST's, %	Number of tumor-specific clusters at threshold, %*			
	# EST's per sub-range	# clusters per sub-range		>90%		100%	
				Observed	Expected	Observed	Expected
1-2	59111	44373	42%	18342	23073	18342	23073
3-4	45400	13401	35%	1880	1884	1880	1884
5-8	53569	8742	37%	567	279	567	172
9-16	63421	5407	39%	168	5	99	4
17-32	83968	3607	41%	45	0	17	0
33-64	176845	3762	43%	16	0	2	0
65-128	349008	3790	45%	10	0	2	0
129-256	460493	2588	47%	8	0	0	0
257-512	339482	975	50%	3	0	0	0
513-1024	208171	303	53%	1	0	0	0
1025-2048	130524	96	57%	0	0	0	0
2049-4096	95180	36	60%	0	0	0	0
4097-8192	49804	10	66%	0	0	0	0
8193-16384	14725	1	67%	0	0	0	0

- [00099] An exemplary method for detecting tumor-associated EST's comprised retrieving sequence data on EST's from all available EST's, arranging the EST's into individual clusters based on homology, identifying EST's expressed in tumor cells and, for each cluster, calculating the percentage of the number of ESTs expressed in tumor cells to all EST's contained in the cluster. A
- 5 threshold value for the percentage of the number of ESTs expressed in tumor cells to all ESTs for each cluster was chosen to identify tumor related clusters. In one example, the percentage of tumor-derived EST's to normal EST's per cluster was a user-defined threshold of at least 90%. Clusters having a percentage of EST's expressed in tumor cells to all EST's for a cluster greater than the threshold value were considered as tumor-associated. Thus, tumor-associated markers represent
- 10 those nucleic acid or polypeptide or fragments thereof that comprise at least 90% of the sequences in an EST cluster. Some sequences observed were markers that represented nucleic acid or polypeptides or fragments thereof that comprised 100 % of the sequences in a cluster.
- [000100] In Table I, there are shown the results of detection of clusters observed at different ranges, with the number of observed tumor related clusters observed versus the number calculated
- 15 or expected. Clusters were sorted into ranges on a linear basis in this example.
- [000101] Using global analysis of cluster data with the methods of the present invention, it has been demonstrated that the sequences of Table 2 represent tumor-associated sequences.

TABLE II

UNIGENE ID	GENE NAME	TUMOR TYPES	SURFACE, IF KNOWN KNOWN TUMOR MARKER INDICATED	REFERENCE NUCLEOTIDE SEQUENCE SEQ. ID NO: 9	REFERENCE PROTEIN SEQUENCE(S) SEQ. ID NO: 10
Hs.203	CKBR (Cholecystokini-nin B receptor)	Choriocarcinoma, glioma, germ cell tumors, lung carcinoma, teratocarcinoma		SEQ. ID NO: 9	SEQ. ID NO: 10
Hs.419	DLX2 (Distal-less homeo box 2)	small cell lung carcinoma, pancreatic carcinoma, intestinal carcinoma, ovary carcinoma		SEQ. ID NO: 11	SEQ. ID NO: 12
Hs.560	APOBEC1 ApolipoproteinB mRNA editing enzyme, cata-lytic polypeptide 1	Colon carcinoma; B-cell chronic lymphocytic leukemia;		SEQ. ID NO: 13	SEQ. ID NO: 14
Hs.575	ALDH3A1 (Aldehydehydrogenase 3 family, member A1)	Pancreatic carcinoma, glioma, cervical carcinoma, lung carcinoma, uterine carcinoma, gastric carcinoma, germ cell tumors, salivary gland carcinoma, bladder carcinoma		SEQ. ID NO: 15	SEQ. ID NO: 16
Hs.1085	GUCY2C Guanylate cyclase 2C (heat stable enterotoxin receptor)	stomach carcinoma, colon carcinoma	SURFACE, KNOWN TUMOR MARKER	SEQ. ID NO: 17	SEQ. ID NO: 18
Hs.1149	LMO1 LIM domain only 1 (rhombotin 1)	Glioma, retinoblastoma, lung carcinoma tumors, pancreatic insulinoma	KNOWN MARKER FOR LEUKEMIA	SEQ. ID NO: 19	SEQ. ID NO: 20
Hs.1619	ASCL1 Achaete-scute complex-like 1 (Drosophila-like)	neuroblastoma, glioma lung carcinoma tumors, germ cell tumors, kidney tumor, medulloblastoma, ovary tumors	KNOWN TUMOR MARKER	SEQ. ID NO: 21	SEQ. ID NO: 22
Hs.1854	KCNA4 Potassium voltage-gated channel, shaker-related subfamily, member 4	lung carcinoma tumors, lung carcinomas	SURFACE	SEQ. ID NO: 23	SEQ. ID NO: 24
Hs.1925	DSG3 Desmoglein 3 (pemphigus vulgaris antigen)	lung carcinomas, pancreatic carcinoma	RANEOPLASTIC MARKER	SEQ. ID NO: 25	SEQ. ID NO: 26
Hs.2266	CHRNA1 Cholinergic receptor, nicotinic, alpha polypeptide 1 (muscle)	Rhabdomyosarcoma	SURFACE	SEQ. ID NO: 27	SEQ. ID NO: 28
Hs.2693	GLI Glioma-associated oncogene homolog (zinc finger protein)	Rhabdomyosarcoma, germ cell tumors, leiomyosarcoma, ovarian tumors, melanoma, Burkitt lymphoma	KNOWN MARKER FOR GLIOMA	SEQ. ID NO: 29	SEQ. ID NO: 30
Hs.2860	POU5F1 POU domain, class 5, transcription factor 1	gastric carcinoma, germ cell tumors, uterus carcinoma, ovarian tumors, teratocarcinoma, lung tumor	KNOWN MARKER FOR GERM CELL TUMORS	SEQ. ID NO: 31	SEQ. ID NO: 32
Hs.2928	SLC7A1 Solute carrier family 7 (cationic amino acid transporter, y-system), member 1	melanoma, glioma, rhabdomyosarcoma neuroblastoma, colon carcinoma, lymphoma	SURFACE	SEQ. ID NO: 33	SEQ. ID NO: 34
Hs.3057	2NF74 Zinc finger protein 74 (Cos52)	cervical carcinoma, leiomyosarcoma, rhabdomyosarcoma glioma, teratocarcinoma, neuroblastoma, prostate		SEQ. ID NO: 35	SEQ. ID NO: 36

Hs.3104	KIAA0042 (KIAA0042 gene product) POM1	carcinoma, colon carcinoma, choriocarcinoma, bladder transitional cell papilloma		SEQ. ID NO: 37	SEQ. ID NO: 38
Hs.5366	EP8R3 Epidermal growth factor receptor pathway substrate 8 related protein 3	Leiomyosarcoma, testicular cancer, prostate carcinoma, bladder carcinoma, kidney hypernephroma, ovarian tumors, lung carcinoma		SEQ. ID NO: 39	SEQ. ID NO: 40
Hs.6168	KIAA0703 (KIAA0703 gene product) POM2	Colon carcinoma, kidney tumors, germ cell tumors, stomach carcinoma		SEQ. ID NO: 41	SEQ. ID NO: 42
Hs.30743	PRAME Preferentially expressed antigen in melanoma	Pancreatic carcinoma, colon carcinoma, bladder transitional cell papilloma, ovarian carcinoma, breast carcinoma, lung carcinoma	KNOWN TUMOR MARKER FOR MELANOMA	SEQ. ID NO: 43	SEQ. ID NO: 44
Hs.30751	LOC55924 Hypothetical protein LOC55924 POM3	Brain neuroblastoma, melanoma, lung carcinoma, small intestine carcinoma, retinoblastoma, leiomyosarcoma, uterus carcinoma, choriocarcinoma, kidney carcinoma, ovarian carcinoma, breast carcinoma, germ cell tumor, esophageal squamous cell carcinoma, colon juvenile granulosa tumor, cervical carcinoma		SEQ. ID NO: 45	SEQ. ID NO: 46
Hs.36793	SLC12A8 Solute carrier family 12 (potassium/chloride transporters), member 8	Retinoblastoma, rhabdomyosarcoma, prostate carcinoma, Burkitt lymphoma	SURFACE	SEQ. ID NO: 47	SEQ. ID NO: 48
Hs.37045	PTH Parathyroid hormone	Lymphoma, colon, ovarian, stomach, prostate, endometrial and hepatic carcinomas	KNOWN TUMOR MARKER	SEQ. ID NO: 49	SEQ. ID NO: 5
Hs.37107	MAGEA4 Melanoma antigen, family A, 4	intestine duodenal carcinoma, glioma, pharynx squamous cell, uterus, ovarian, melanoma	KNOWN TUMOR MARKER FOR MELANOMA	SEQ. ID NO: 51	SEQ. ID NO: 5
Hs.37110	MAGEA9 Melanoma antigen, family A, 9	Lung carcinoma, bladder transitional cell papilloma, T cell leukemia, genitourinary tract transitional cell tumors	KNOWN TUMOR MARKER FOR MELANOMA	SEQ. ID NO: 53	SEQ. ID NO: 5
Hs.46452	SCGB2A2 Secretoglobulin, family 2A, member 2	lung carcinoma	SURFACE	SEQ. ID NO: 55	SEQ. ID NO: 5
Hs.48956	GJB6 Gap junction protein, beta 6 (connexin 30)	glioma, prostate carcinoma, uterus carcinoma, pancreatic carcinoma, skin squamous cell carcinoma	SURFACE	SEQ. ID NO: 57	SEQ. ID NO: 5
Hs.49605	ESTs, Weakly similar to hypothetical protein FLJ22184 [Homo sapiens] POM4	melanoma		SEQ. ID NO: 59	SEQ. ID NO: 6

Hs.53563	COL9A3 Collagen, type IX, alpha 3			SEQ. ID NO: 61	SEQ. ID NO: 62
Hs.54424	HNF4A Hepatocyte nuclear factor 4, alpha	melanoma, choriocarcinoma, B-cell chronic lymphocytic leukemia, germ cell, uterus serous carcinoma, stomach carcinoma, retinoblastoma, sarcoma, glioma, cervical carcinoma			
Hs.54567	PAX1 Paired box gene 1	Kidney tumors, germ cell tumors, colon carcinoma		SEQ. ID NO: 63	SEQ. ID NO: 64
Hs.66357	POM5	leiomyosarcoma		SEQ. ID NO: 65	SEQ. ID NO: 66
Hs.67397	HOXA1 Homeobox A1	Endometrial, pancreatic, lymphoma, lung B-cell chronic lymphocytic leukemia		SEQ. ID NO: 67	SEQ. ID NO: 68
Hs.67624	POM6	melanoma, teratocarcinoma, germ cell tumors, stomach carcinoma, hypernephroma, bladder carcinoma		SEQ. ID NO: 69	SEQ. ID NO: 70
Hs.68864	Membrane-bound phosphatidic acid-selective phospholipase A1	germ cell tumors		SEQ. ID NO: 73	SEQ. ID NO: 71
Hs.73893	DRD2 Dopamine receptor D2	B-cell chronic lymphocytic leukemia, colon, stomach, pancreatic carcinomas	SURFACE	SEQ. ID NO: 75	SEQ. ID NO: 72
Hs.73952	PRH2 Proline-rich protein HaeIII subfamily 2	lung carcinoma, neuroblastoma, glioma, pancreas carcinoma, rhabdomyosarcoma	SURFACE	SEQ. ID NO: 77	SEQ. ID NO: 74
Hs.74126	FABP6 Fatty acid binding protein 6, ileal/gastrointestinal	Nervous tumors, colon carcinoma, head and neck squamous cell carcinoma	SECRETED	SEQ. ID NO: 79	SEQ. ID NO: 76
Hs.79414	PDEF Prostate epithelium-specific Ets transcription factor	Lymphoma, uterus carcinoma, kidney Carcinoma, lung carcinoma, ovarian Carcinoma, lung carcinoma, breast, Pancreatic, colon, endometrial, prostate, lung, ovarian, stomach, prostate carcinomas and glioma	KNOWN MARKER-BREAST CARCINOMA POSSIBLY PROSTATIC CARCINOMA	SEQ. ID NO: 81	SEQ. ID NO: 78
Hs.86232	GDF3 Growth differentiation factor 3	germ cell tumors, neuroepithelial tumors	Embryonal carcinoma stem cell-associated marker; Possibly GERM CELL TUMORS	SEQ. ID NO: 83	SEQ. ID NO: 80
Hs.87225	CTAG2 Cancer/testis antigen 2	choriocarcinoma, breast carcinoma, endometrium carcinoma, melanoma, stomach carcinoma	KNOWN TUMOR MARKER	SEQ. ID NO: 85	SEQ. ID NO: 82
Hs.89143	POM7	ovarian tumors		SEQ. ID NO: 87	SEQ. ID NO: 84
Hs.89605	CHRNA3 Cholinergic receptor, nicotinic, alpha polypeptide3	neuroblastoma, lung carcinoma, small intestine carcinoma		SEQ. ID NO: 89	SEQ. ID NO: 86
Hs.97258	POM8 similar to S29539 ribosomal protein L13a, cytosolic	Pancreas, endometrial, ovarian carcinomas, lung carcinoma tumors and germ cell tumors	SURFACE	SEQ. ID NO: 91	SEQ. ID NO: 87
Hs.97283	POM9	ovarian tumors		SEQ. ID NO: 93	SEQ. ID NO: 88
Hs.97860	KIAA1484 KIAA1484 protein	Ovarian carcinoma, retinoblastoma, endometrium carcinoma		SEQ. ID NO: 95	SEQ. ID NO: 89
				SEQ. ID NO: 97	SEQ. ID NO: 90



Hs.98988	POM10 Homo sapiens, clone IMAGE:4425111, mRNA, partial cds	germ cell tumors, hypernephroma, ovarian tumors, colon, uterus, stomach, pancreas, skin squamous cell carcinomas	SEQ. ID NO: 99	SEQ. ID NO: 100
Hs.99624	POM11	parathyroid tumor, ovarian tumor, Stomach carcinoma	SEQ. ID NO: 101	SEQ. ID NO: 102
Hs.99960	MS4A3 Membrane-spanning 4-domains, subfamily A, member 3 (hematopoietic cell-specific)	Lung carcinoma, chronic myelogenous leukemia, prostate carcinoma	SEQ. ID NO: 103	SEQ. ID NO: 104
Hs.103504	ESR2 Estrogen receptor 2 (ER beta)	germ cell tumors, lung carcinoma, neuroblastoma	SEQ. ID NO: 105	SEQ. ID NO: 106
Hs.103707	MUC5AC Mucin 5, subtypes A and C, tracheobronchial/gastric	COLON, PANCREATIC, STOMACH CARCINOMAS, LUNG TUMORS	SEQ. ID NO: 107	SEQ. ID NO: 108
Hs.104073	POM12	Colon, stomach carcinoma	SEQ. ID NO: 109	SEQ. ID NO: 110
Hs.104115	ZNF10 Zinc finger protein 10 (K0X1)	parathyroid, lung carcinoma, nervous cell tumors, adrenal cortex carcinoma, germ cell tumors, uterus tumor, multiple myeloma	SEQ. ID NO: 111	SEQ. ID NO: 112
Hs.105484	REG-IV Regenerating gene type IV	Prostate, duodenal, colon and stomach carcinomas, B-cell chronic lymphocytic leukemia, acute myelogenous leukemia	SEQ. ID NO: 113	SEQ. ID NO: 114
Hs.105667	POM13	ovarian tumors	SEQ. ID NO: 115	SEQ. ID NO: 116
Hs.105924	DEFB4 Defensin, beta 4	Head and neck carcinoma	SEQ. ID NO: 117	SEQ. ID NO: 118
Hs.112341	PT3 Protease inhibitor 3, skin-derived (SKALP)	Glioma, B-cell chronic lymphocytic leukemia, uterus, lung and colon carcinomas, ovarian, prostate, colon carcinomas, bladder, nervous cell and placenta tumors	SEQ. ID NO: 119	SEQ. ID NO: 120
Hs.113262	HTR45 hydroxytryptamine (serotonin) receptor 4	Schwannoma	SEQ. ID NO: 121	SEQ. ID NO: 122
Hs.114905	ERN2 (ER to nucleus signalling 2)	Stomach, colon, pancreatic carcinoma	SEQ. ID NO: 123	SEQ. ID NO: 124
Hs.117938	COL17A1 Collagen, type XVII, alpha 1	glioma, pancreas, lung, colon, nasopharyngeal, stomach carcinomas, germ cell, bladder, uterus tumors, leiomyosarcoma	SEQ. ID NO: 125	SEQ. ID NO: 126
Hs.122310	POM14	parathyroid tumor	SEQ. ID NO: 127	SEQ. ID NO: 128
Hs.123094	SALL1 Sal-like 1 (Drosophila)	Retinoblastoma, germ cell tumors, glioma	SEQ. ID NO: 129	SEQ. ID NO: 130
Hs.123993	POM15	Glioma, colon carcinoma, lung carcinoma tumors, parathyroid tumor	SEQ. ID NO: 131	SEQ. ID NO: 132
Hs.124173	POM16	weakly similar to T00366 hypothetical protein KIAA0669	SEQ. ID NO: 133	SEQ. ID NO: 134
Hs.124638	POM17	parathyroid tumor	SEQ. ID NO: 135	SEQ. ID NO: 136
		COLON CARCINOMA	SEQ. ID NO: 137	

Hs.125293	POM18	Glioma, lung carcinoma, kidney tumors, germ cell tumors, parathyroid tumor, stomach carcinoma, ovary carcinoma		SEQ. ID NO: 138	SEQ. ID NO: 139
Hs.126566	POM19	Colon carcinoma		SEQ. ID NO: 140	SEQ. ID NO: 141
Hs.126869	POM20	LUNG CARCINOID TUMORS, germ cell tumor		SEQ. ID NO: 142	SEQ. ID NO: 143
Hs.127144	POM21	Colon carcinoma		SEQ. ID NO: 144	SEQ. ID NO: 145
Hs.127383	POM22	Colon carcinoma		SEQ. ID NO: 146	SEQ. ID NO: 147
Hs.127476	POM23	Lung carcinoma tumors, glioma, kidney tumors, chondrosarcoma, germ cell tumors, Ewing's sarcoma		SEQ. ID NO: 148	SEQ. ID NO: 149
Hs.128001	POM24	COLON CARCINOMA		SEQ. ID NO: 150	SEQ. ID NO: 151
Hs.128115	POM25	germ cell, lung carcinoma and kidney tumors, glioma, melanoma		SEQ. ID NO: 153	SEQ. ID NO: 154
Hs.128326	POM26	germ cell tumors		SEQ. ID NO: 155	SEQ. ID NO: 156
Hs.128398	POM27	Lung carcinoma tumors		SEQ. ID NO: 157	SEQ. ID NO: 159
Hs.128436	POM28	Lung carcinoma tumors		SEQ. ID NO: 158	SEQ. ID NO: 159
Hs.128437	POM29	Lung carcinoma tumors, kidney tumors, cervical carcinoma		SEQ. ID NO: 160	SEQ. ID NO: 161
Hs.128907	POM30	LUNG CARCINOID TUMORS		SEQ. ID NO: 162	SEQ. ID NO: 163
Hs.129040	POM31	parathyroid tumor, lung carcinoma tumors		SEQ. ID NO: 164	SEQ. ID NO: 1
Hs.129108	POM32	Lung carcinoma tumors		SEQ. ID NO: 166	SEQ. ID NO: 1
Hs.129302	POM33	lung carcinoma, germ cell tumors		SEQ. ID NO: 168	SEQ. ID NO: 1
Hs.129782	MUC3B Mucin 3B	Pancreatic carcinoma, kidney tumors, colon carcinoma choriocarcinoma, breast carcinoma, stomach tumor, head and neck tumor, lung tumor, ovary tumor	PROBABLY KNOWN TUMOR MARKER	SEQ. ID NO: 170	SEQ. ID NO: 1
Hs.131358	POM34	germ cell tumors, choriocarcinoma		SEQ. ID NO: 172	SEQ. ID NO: 1
Hs.132370	NOX1 NADPH oxidase 1	colon carcinomas, glioma, lung carcinoma tumors, kidney tumors, breast carcinoma		SEQ. ID NO: 174	SEQ. ID NO: 1
Hs.132576	Paired box gene 9	Lung carcinoma, parathyroid tumor, stomach carcinoma, head and neck carcinoma		SEQ. ID NO: 176	SEQ. ID NO: 1
				SEQ. ID NO: 178	SEQ. ID NO: 1

Hs.133081	POM35 Homo sapiens cDNA FLJ25124 fis	Esophagus carcinoma, germ cell tumors, glioma, lung carcinoma, chondrosarcoma, uterus carcinoma	SEQ. ID NO: 180	SEQ. ID NO: 181
Hs.133089	DEFB DNA fragmentation factor, 40 kD, beta polypeptide (caspase-activated DNase)	Lung carcinoid tumors, breast carcinoma, colon carcinoma, nervous cell tumor, leiomyoma, acute myelogenous leukemia, osteosarcoma	SEQ. ID NO: 182	SEQ. ID NO: 183
Hs.133107	POM36	Ovary carcinoma, lung carcinoma, glioma	SEQ. ID NO: 184	SEQ. ID NO: 185
Hs.133294	POM37	Uterus carcinoma, lung carcinoma, Ovary carcinoma, chronic myelogenous leukemia, breast carcinoma, glioma, colon juvenile granulosa tumor, adrenal adenoma, prostate tumor, head and neck carcinoma	SEQ. ID NO: 186	SEQ. ID NO: 187 SEQ. ID NO: 188
Hs.133296	POM38	Ovary carcinoma, lung carcinoma	SEQ. ID NO: 189	SEQ. ID NO: 190
Hs.133300	POM39	Breast carcinoma, ovary carcinoma, lung carcinoma	SEQ. ID NO: 191	SEQ. ID NO: 192
Hs.133451	POM40	germ cell tumors, colon carcinoma	SEQ. ID NO: 193	SEQ. ID NO: 194
Hs.135365	POM41	Pancreatic carcinoma, ovarian carcinoma, lung carcinoma	SEQ. ID NO: 195	SEQ. ID NO: 196
Hs.140457	POM42	Kidney tumors, lung carcinoid tumors, insulinoma, glioma, cervical carcinoma, stomach tumors	SEQ. ID NO: 197	SEQ. ID NO: 198
Hs.142907	POM43 Human BRCA2 region, mRNA sequence CG011	Lung carcinoid tumors, fibrotheoma, ovary tumors, uterus tumors	SEQ. ID NO: 199	SEQ. ID NO: 200
Hs.143507	T T, brachyury homolog	Lung carcinoma, B-cell chronic lymphocytic leukemia, breast carcinoma, germ cell tumors	SEQ. ID NO: 201	SEQ. ID NO: 202
Hs.143949	POM44	Colon carcinoma	SEQ. ID NO: 203	SEQ. ID NO: 2
Hs.144063	POM45	Lung carcinoid tumors	SEQ. ID NO: 205	SEQ. ID NO: 2
Hs.144121	POM46, Moderately similar to hypothetical protein, MNCB-123; hypothetical protein, MNCB-1231	glioma, lung carcinoma	SEQ. ID NO: 207	SEQ. ID NO: 2
Hs.145327	POM47	chronic myelogenous leukemia, Ovary carcinoma, colon carcinoma, lung carcinoma, head and neck carcinoma	SEQ. ID NO: 209	SEQ. ID NO: 2
Hs.145340	POM48	lung carcinoma, Ovary carcinoma, head and neck carcinoma	SEQ. ID NO: 211	SEQ. ID NO: 2
Hs.145356	POM49	Ovary carcinoma, lung carcinoma	SEQ. ID NO: 213	SEQ. ID NO: 2
Hs.145357	POM50	Ovary carcinoma, breast carcinoma, head and neck carcinoma, lung carcinoma	SEQ. ID NO: 215	SEQ. ID NO: 2
Hs.145489	POM51	Ovary carcinoma	SEQ. ID NO: 217	SEQ. ID NO: 2

Hs.145492	POM52	Ovary carcinoma, lung carcinoma	SEQ. ID NO: 219	SEQ. ID NO: 220
Hs.145493	POM53	Ovary carcinoma, uterus tumor	SEQ. ID NO: 221	SEQ. ID NO: 222
Hs.145500	POM54	Ovary carcinoma, lung carcinoma	SEQ. ID NO: 223	SEQ. ID NO: 224
Hs.145509	POM55	Lung carcinoma, ovary carcinoma, breast carcinoma, glioma, stomach carcinoma	SEQ. ID NO: 225	SEQ. ID NO: 226
Hs.145661	POM56	Colon carcinoma	SEQ. ID NO: 227	SEQ. ID NO: 228
Hs.145809	POM57, Weakly similar to T31613 hypothetical protein Y50E8A.i - Caenorhabditis elegans	Uterus carcinoma, stomach carcinoma, pancreatic carcinoma, placenta tumor	SEQ. ID NO: 229	
Hs.146200	POM58	Ovary carcinoma, breast carcinoma, head and neck carcinoma	SEQ. ID NO: 230	SEQ. ID NO: 231
Hs.147291	POM59	germ cell tumors	SEQ. ID NO: 232	SEQ. ID NO: 233
Hs.148661	POM60	Lung carcinoma tumors, germ cell tumors	SEQ. ID NO: 234	SEQ. ID NO: 235
Hs.152290	POM61, Highly similar to VIPS HUMAN VASOACTIVE INTESTINAL POLYPEPTIDE RECEPTOR 2 PRECURSOR [H.sapiens]	Rhabdomyosarcoma, glioma, colon carcinoma	SEQ. ID NO: 236	SEQ. ID NO: 237
Hs.152531	HAND1 Heart and neural crest derivatives expressed 1	Neuroblastoma, Schwannoma, germ cell tumors, sarcoma	SEQ. ID NO: 238	SEQ. ID NO: 239
Hs.153444	POM62	Lung carcinoma tumors, breast carcinoma	SEQ. ID NO: 240	SEQ. ID NO: 241
Hs.352562	POM63, Homo sapiens CDNA FLJ33010 fis, clone THYM1000336 UniGene cluster identifier Hs.154173 has been retired	Teratocarcinoma, liposarcoma, pheochromocytoma, lung carcinoma, cervical carcinoma, chondrosarcoma, breast carcinoma, leiomyoma, lymphoma, uterus tumor, head and neck carcinoma, colon carcinoma, breast carcinoma, melanoma, skin carcinoma, prostate tumor	SEQ. ID NO: 242	SEQ. ID NO: 243
Hs.155981	current cluster Hs.352562 MSLN Mesothelin	Pancreas, prostate, cervical, liver, uterus, colon, stomach, head and neck and lung carcinomas, choriocarcinoma, glioma, ovarian and uterus tumors, chondrosarcoma	SEQ. ID NO: 244	SEQ. ID NO: 2
Hs.156213	POM64	Lung carcinoma tumors, head and neck carcinoma, colon carcinoma	SEQ. ID NO: 246	SEQ. ID NO: 2
Hs.156499	POM65	Uterus tumors, lymphomas and leukemias	SEQ. ID NO: 248	SEQ. ID NO: 2
Hs.156637	CBLC Cas-BF-M (murine) ectropic retroviral transforming sequence c	stomach, lung, breast, colon, lung pancreas and head and neck carcinomas, glioma, choriocarcinoma Uterus and carcinoid tumors	SEQ. ID NO: 250	SEQ. ID NO: 2
Hs.156762	POM66	germ cell tumors	SEQ. ID NO: 252	SEQ. ID NO: 2
Hs.156810	POM67 Weakly similar to EF11 HUMAN ELONGATION FACTOR 1- ALPHA 1 [H.sapiens]	Uterus carcinoma	SEQ. ID NO: 254	SEQ. ID NO: 2
Hs.156813	POM68 (MGC10600) predicted protein MGC10600	Melanoma, choriocarcinoma, germ cell tumor	SEQ. ID NO: 256	SEQ. ID NO: 2

Hs.156843	POM69	Lung carcinoid tumors, germ cell tumors, melanoma		SEQ. ID NO: 258	SEQ. ID NO: 259
Hs.156905	KIRAL676	germ cell and lung carcinoid tumors, Ewing's sarcoma, ovary, adrenal cortex and uterus carcinomas, retinoblastoma		SEQ. ID NO: 260	SEQ. ID NO: 261
Hs.157205	BCAT1 Branched chain aminotransferase-1, cytosolic	germ cell tumors, lung carcinoma, glioma, lymphoma, teratocarcinoma, rhabdomyosarcoma, lung carcinoma, embryonal carcinoma, uterus tumor		SEQ. ID NO: 262	SEQ. ID NO: 263
Hs. 79707	TNFRSF19L Tumor necrosis factor receptor superfamily, member 19-like  UniGene cluster identifier Hs.158218 has been retired now Hs.79707	Colon carcinoma, glioma, B-cell chronic lymphocytic leukemia, ovary tumors, germ cell tumors, chondrosarcoma, neuroblastoma, melanoma, stomach carcinoma, leiomyosarcoma, renal cell carcinoma, uterus carcinoma, lung carcinoma, lymphoma, pre-B cell acute lymphoblastic leukemia		SEQ. ID NO: 264	SEQ. ID NO: 265
Hs.158333	PRSS7 Protease, serine, 7 (enterokinase)	Glioma, breast carcinoma		SEQ. ID NO: 266	SEQ. ID NO: 267
Hs.158460	CDK5R2 Cyclin-dependent kinase 5, regulatory subunit 2 (p39)	germ cell tumors, lung carcinoid tumors, glioma, adrenal cortex carcinoma, lung carcinoma, neuroblastoma		SEQ. ID NO: 268	SEQ. ID NO: 269
Hs.158521	POM70	Kidney tumors, breast carcinoma		SEQ. ID NO: 270	SEQ. ID NO: 271
Hs.160724	POM71	glioma, lung carcinoid tumors		SEQ. ID NO: 272	SEQ. ID NO: 273
Hs.162717	POM72, (MGC15668) Hypothetical protein MGC15668	Choriocarcinoma, neuroblastoma, placenta tumor, lung, colon, stomach carcinomas germ cell tumors, burkitt lymphoma,		SEQ. ID NO: 274	SEQ. ID NO: 275

Hs.236510	TPARL TPA regulated locus			SEQ. ID NO: 276	SEQ. ID NO: 277
Hs.356072	POM73, Moderately similar to POL2 HUMAN RETROVIRUS-RELATED POLYPROTEIN [H.sapiens]		Melanoma, rhabdomyosarcoma, renal cell carcinoma, mucoepidermoid carcinoma, uterus carcinoma, B-cell chronic lymphocytic leukemia, colon carcinoma, lymphoma, ovary fibrothecoma, lung carcinoma, kidney tumors, breast carcinoma, glioma, parathyroid tumor, germ cell tumors, liposarcoma, thyroid tumor, lung carcinoid tumors, liposarcoma, small intestine duodenal carcinoma, genitourinary tract transitional cell tumors, head and neck carcinoma, melanoma, endometrium carcinoma, adrenal cortex carcinoma, osteosarcoma, oral carcinoma, synovial sarcoma, lung carcinoma, renal cell carcinoma, chondrosarcoma, breast carcinoma, melanoma, meningioma, lymphoma, chronic myelogenous leukemia, embryonal cell carcinoma	SEQ. ID NO: 278	SEQ. ID NO: 279
Hs.336963	EVX1 Eve, even-skipped homeo box homolog 1 (Drosophila)		Lung carcinoid tumors, lung carcinoma	SEQ. ID NO: 280	SEQ. ID NO: 281
Hs.170046	POM74		Colon carcinoma	SEQ. ID NO: 282	SEQ. ID NO: 283
Hs.170482	MYL5 Myosin, light polypeptide 5, regulatory		Ovary carcinoma Ovary tumors, glioma, lung carcinoma, breast colon and pancreatic carcinoma, kidney tumors, leiomyosarcoma, uterus tumors	SEQ. ID NO: 284	SEQ. ID NO: 285
Hs.170993	POM75		Kidney tumors, prostatic carcinoma	SEQ. ID NO: 286	SEQ. ID NO: 2
Hs.172330	POM76 (MGC2705) predicted MGC2705		cervical, lung and breast carcinoma, retinoblastoma, melanoma, leiomyosarcoma, Wilms tumor, breast rhabdomyosarcoma, acute myelogenous leukemia, burkitt lymphoma	SEQ. ID NO: 288	SEQ. ID NO: 2
Hs.172603	POM77		prostate carcinoma	SEQ. ID NO: 290	SEQ. ID NO: 2
Hs.330485	POM78		Ovary carcinoma	SEQ. ID NO: 292	SEQ. ID NO: 2
Hs.180142	CLSP Calmodulin-like skin protein		Skin carcinoma, breast carcinoma, lung carcinoma	SEQ. ID NO: 294	SEQ. ID NO: 2
Hs.328801	POM79		Lung carcinoma, breast carcinoma	SEQ. ID NO: 296	SEQ. ID NO: 2
Hs.181654	POM80		Lung carcinoid tumors, kidney tumors	SEQ. ID NO: 298	SEQ. ID NO: 2
Hs.182362	POM90		Ovarian carcinoma, kidney tumors	SEQ. ID NO: 300	SEQ. ID NO: 3
Hs.185831	POM91		Prostate, stomach and bladder carcinoma	SEQ. ID NO: 302	SEQ. ID NO: 3
Hs.189358	POM92		Lung carcinoid tumors, germ cell tumors, breast carcinoma	SEQ. ID NO: 304	SEQ. ID NO: 3

Hs.190488	POM93 (Homo sapiens mRNA; cDNA DKF2p667M2411 (from clone DKF2p667M2411))	Skin squamous cell carcinoma, stomach carcinoma, colon carcinoma, parathyroid tumor, lung carcinoma, glioma, breast carcinoma, lymphoma, melanoma, uterus carcinoma, prostate carcinoma, chondrosarcoma, retinoblastoma, cervical carcinoma, renal carcinoma, head and neck carcinoma, chronic myelogenous leukemia, hypernephroma, uterus carcinoma, leiomyoma	SEQ. ID NO: 306	SEQ. ID NO: 307
Hs.191574	POM94 (Homo sapiens cDNA FLJ13050 fis, clone NT2RP3001432)	Pancreas carcinoma, parathyroid tumor, ovary tumors, teratocarcinoma, acute myelogenous leukemia, lung carcinoma tumors, hypernephroma, head and neck carcinoma, melanoma	SEQ. ID NO: 308	SEQ. ID NO: 309
Hs.193677	2NF141 Zinc finger protein 141 (clone pR2-44)	Retinoblastoma, lung carcinoma tumors, hypernephroma, glioma, head and neck carcinoma ovary tumors, leiomyoma	SEQ. ID NO: 310	SEQ. ID NO: 311
Hs.195081	POM95	Germ cell tumors	SEQ. ID NO: 312	SEQ. ID NO: 313
Hs.195374	POM96	Germ cell tumors, B-cell chronic lymphocytic leukemia, kidney tumor, uterus tumors	SEQ. ID NO: 314	SEQ. ID NO: 315
Hs.195641	POM97	Uterus carcinoma, lung carcinoma, colon carcinoma, nervous cell tumors, breast carcinoma, stomach carcinoma	SEQ. ID NO: 316	SEQ. ID NO: 317
Hs.196073	POM98	Lung carcinoma, germ cell tumors, stomach carcinoma, genitourinary tract transitional cell carcinoma	SEQ. ID NO: 318	SEQ. ID NO: 3
Hs.199460	DPOR1 DPOR1 protein	Pancreas carcinoma, stomach carcinoma	SEQ. ID NO: 320	SEQ. ID NO: 3
Hs.202247	POM99	Lung carcinoma tumors	SEQ. ID NO: 322	SEQ. ID NO: 3
Hs.202512	POM100	Lung carcinoma tumors, colon carcinoma	SEQ. ID NO: 324	SEQ. ID NO: 3
Hs.202577	POM101 (Homo sapiens cDNA FLJ12166 fis, clone MAMMA1000616)	Schwannoma, lung carcinoma tumors, germ cell tumors, lymphoma, colon carcinoma, glioma	SEQ. ID NO: 326	SEQ. ID NO: 3
Hs.202612	POM102	Lung carcinoma, colon carcinoma	SEQ. ID NO: 328	SEQ. ID NO: 3
Hs.209560	POM103	Lung carcinoma, embryonal cell carcinoma, pituitary tumor	SEQ. ID NO: 330	SEQ. ID NO: 3
Hs.209646	POM104 (K1A01118) K1A01118 protein	Lung carcinoma, choriocarcinoma, melanoma, glioblastoma, neuroblastoma, osteosarcoma, colon carcinoma, breast carcinoma, lymphoma, glioma, retinoblastoma	SEQ. ID NO: 332	SEQ. ID NO: 3
Hs.211238	IL-1HI Interleukin-1 homolog 1	colon carcinoma, head and neck carcinoma	SEQ. ID NO: 334	SEQ. ID NO: 3

Hs.217766	POM105	Ovary carcinoma		SEQ. ID NO: 336	SEQ. ID NO: 337
Hs.217882	POM106	glioma, colon carcinoma, kidney tumors, prostate tumors, lung carcinoma, hypernephroma, head and neck carcinoma, duodenal carcinoma, melanoma, pancreatic carcinoma, uterus tumors		SEQ. ID NO: 338	SEQ. ID NO: 339
Hs.220529	CEACAM5 Carcinoembryonic antigen-related cell adhesion molecule 5	Pancreas carcinoma, colon carcinoma, stomach carcinoma, head and neck carcinoma, lung carcinoma leiomyoma, breast carcinoma	KNOWN TUMOR MARKER	SEQ. ID NO: 340	SEQ. ID NO: 341
Hs.222056	POM107 Homo sapiens cDNA FLJ11572 fis, clone HEMBA1003373	Stomach carcinoma, head and neck carcinoma, breast carcinoma		SEQ. ID NO: 342	SEQ. ID NO: 343
Hs.225083	POM108	Melanoma, ovary tumors, colon carcinoma, parathyroid tumor, kidney tumors, head and neck carcinoma		SEQ. ID NO: 344	SEQ. ID NO: 345
Hs.227098	GCHB Glial cells missing homolog b (Drosophila)	parathyroid tumor		SEQ. ID NO: 346	SEQ. ID NO: 347
Hs.239107	POM109	Lymphoma, germ cell tumors, head and neck carcinoma		SEQ. ID NO: 348	SEQ. ID NO: 349
Hs.239891	GPR35 G protein-coupled receptor 35	B-cell chronic lymphocytic leukemia, colon carcinoma, pancreas and carcinoma	SURFACE	SEQ. ID NO: 350	SEQ. ID NO: 351
Hs.241381	CRSP7 Cofactor required for Spl transcriptional activation, subunit 7 (70kD)	Pancreatic carcinoma, duodenal carcinoma, ovary carcinoma, melanoma, osteosarcoma, glioma, leiomyosarcoma, germ cell tumors		SEQ. ID NO: 352	SEQ. ID NO: 353
Hs.241407	SERPINB13 Serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 13	ORAL carcinoma, cervical carcinoma, head and neck carcinoma		SEQ. ID NO: 354	SEQ. ID NO: 355
Hs.243920	POM110	Pancreas carcinoma		SEQ. ID NO: 356	SEQ. ID NO: 3
Hs.244378	SLC2A6 Solute carrier family 2 (facilitated glucose transporter), member 6	Hypernephroma, pancreatic carcinoma, glioma, lung carcinoma, neuroblastoma, renal cell carcinoma, adrenal gland tumors		SEQ. ID NO: 358	SEQ. ID NO: 3
Hs.246781	POM111	parathyroid tumor, lung carcinoma tumors, germ cell tumors, hepatocellular carcinoma, stomach carcinoma, breast carcinoma		SEQ. ID NO: 360	SEQ. ID NO: 3



Hs.247817	H2B/S Histone family member A	Breast carcinoma, chronic myelogenous leukemia, cervical carcinoma, melanoma, ovary carcinoma, lung carcinoma, osteosarcoma, mucoepidermoid carcinoma, duodenal carcinoma, leiomyosarcoma, glioma, prostate carcinoma, kidney tumors, colon carcinoma, prostatic tumors, intraepithelial neoplasia, lymphoma, uterus carcinoma, parathyroid tumor, insulinoma, chondrosarcoma, ovary tumors, multiple myeloma, chondrosarcoma, bladder tumors, parathyroid tumors, insulinoma, breast carcinoma, phet tumors,	SEQ. ID NO: 362	SEQ. ID NO: 363
Hs.250158	POM112	Head and neck carcinoma, stomach carcinoma, colon carcinoma	SEQ. ID NO: 364	SEQ. ID NO: 365
Hs.250848	Pom13Homo sapiens cDNA FLJ14761 f1s, clone NT2RP3003302	Uterus carcinoma, prostate tumor, glioma, duodenal carcinoma, colon carcinoma, glioma, stomach carcinoma, Germ cell tumors, lung carcinoma, embryonal cell carcinoma, breast carcinoma, choriocarcinoma	SEQ. ID NO: 366	SEQ. ID NO: 367
Hs.252351	HHLA2 HERV-H LTR-associating 2	Colon carcinoma, kidney tumors, ovary tumors, Stomach tumors, prostate carcinoma,	SEQ. ID NO: 368	SEQ. ID NO: 369
Hs.253298	POM114	Head and neck carcinoma, germ cell tumors	SEQ. ID NO: 370	SEQ. ID NO: 371
Hs.254379	POM115	Ovary carcinoma	SEQ. ID NO: 372	SEQ. ID NO: 373
Hs.255877	POM116	Leukemia	SEQ. ID NO: 374	SEQ. ID NO: 375
Hs.266390	POM117	Lung carcinoma tumors, pre-B cell acute lymphoblastic leukemia, ovarian carcinoma	SEQ. ID NO: 376	SEQ. ID NO: 377
Hs.268171	POM118	Nervous cell tumors, germ cell tumors, prostatic intraepithelial neoplasia, ovary tumors	SEQ. ID NO: 378	SEQ. ID NO: 379

Hs. 106823	STX12 Syntaxin 12 and MGC14797 Hypothetical protein MGC14797	Bladder carcinoma, colon carcinoma, lymphoma, prostate carcinoma, pancreas carcinoma, breast carcinoma, Wilms' tumor, uterus carcinoma, meningioma, kidney tumors, lung carcinoma, stomach carcinoma, parathyroid tumor, germ cell tumors, ovary tumors, B-cell chronic lymphocytic leukemia, germ cell tumors, thyroid tumor, leiomyosarcoma, duodenal carcinoma, pancreatic carcinoma, alveolar rhabdomyosarcoma, glioma, head and neck carcinoma, bladder transitional cell papilloma, retinoblastoma, chondrosarcoma, Stomach carcinoma, pre-B cell acute lymphoblastic leukemia, lung carcinoma, hepatocellular carcinoma, melanoma, fibrosarcoma, lymphoma, chondrosarcoma, osteosarcoma, hepatocellular carcinoma, Burkitt lymphoma, uterus carcinoma	SEQ. ID NO: 380 SEQ. ID NO: 382	SEQ. ID NO: 381 SEQ. ID NO: 383
Hs.355428	Pom119, Weakly similar to B34087 Predicted protein [H.sapiens]	Pancreas carcinoma, glioma, breast carcinoma, lung carcinoma tumors, Ewing's sarcoma, colon carcinoma, melanoma, lung carcinoma, head and neck carcinoma, ovary carcinoma, pnet tumor	SEQ. ID NO: 384	SEQ. ID NO: 3
Hs.272216	GP6 Glycoprotein VI (platelet)	Rhabdomyosarcoma, colon carcinoma, head and neck carcinoma, epidermal tumors, nervous cell tumors	SEQ. ID NO: 386	SEQ. ID NO: 3
Hs.272499	DHRS2 Dehydrogenase/reductase (SDR family) member 2	Bladder transitional cell papilloma, melanoma, colon carcinoma, hepatocellular carcinoma, endometrial carcinoma, lung carcinoma tumors, colon carcinoma, lymphoma, fibrosarcoma, kidney tumor, meningioma, genitourinary tract transitional cell tumors, fibrosarcoma, Stomach tumor, breast carcinoma	SEQ. ID NO: 388	SEQ. ID NO: 3
Hs.273625	POM120	Stomach carcinoma	SEQ. ID NO: 390	SEQ. ID NO: 3

Hs.278291	POM121 Weakly similar to 810024J URF 4 [H.sapiens]	endometrial carcinoma		SEQ. ID NO: 392	SEQ. ID NO: 393
Hs.279805	POM122	Lung carcinoid tumors, nervous cell tumors, pnet tumor,		SEQ. ID NO: 394	
Hs.280146	POM123 Weakly similar to L1 repeat, Tf subfamily, member 18 [Mus musculus]	Lung carcinoid and ovarian tumors, glioma		SEQ. ID NO: 395	
Hs.109274	POM124 MGC4365 Predicted protein MGC4365	Lung carcinoma, stomach carcinoma, colon carcinoma, breast carcinoma, glioma, kidney tumors, melanoma, choriocarcinoma, t-cell leukemia, cervical carcinoma, neuroblastoma, retinoblastoma, multiple myeloma, ovary carcinoma, pre-B cell acute lymphoblastic leukemia, uterus carcinoma, kidney tumors, lung carcinoma, endometrial carcinoma, renal cell carcinoma, acute myelogenous leukemia cell, cervical carcinoma		SEQ. ID NO: 396	SEQ. ID NO: 397
Hs.282050	POM125 Homo sapiens cDNA FLJ31265 fis, clone KIDNE2008030, moderately similar to Gallus gallus syndesmos mRNA	Prostate carcinoma, embryonal cell carcinoma, ovary carcinoma, kidney tumors, colon carcinoma, germ cell tumors, neuroblastoma, retinoblastoma, melanoma, breast carcinoma, ovary tumors, renal cell carcinoma, endometrium carcinoma, leiomyosarcoma, glioma, head and neck carcinoma, nervous cell tumors, neuroblastoma, cervical carcinoma, leukemia, ovarian carcinoma, head and neck tumors,		SEQ. ID NO: 398	SEQ. ID NO: 399
Hs.284203	MYO1 Myogenic factor 3	Rhabdomyosarcoma, burkitt lymphoma		SEQ. ID NO: 400	SEQ. ID NO: 4
Hs.285026	HHL1 HERV-H LTR-associating 1	Colon carcinoma		SEQ. ID NO: 402	SEQ. ID NO: 4
Hs.285887	POM126 Weakly similar to 2109260A B cell growth factor [H.sapiens]	hepatocellular carcinoma		SEQ. ID NO: 404	SEQ. ID NO: 4
Hs.285894	POM127	hepatocellular carcinoma		SEQ. ID NO: 406	SEQ. ID NO: 4
Hs.288568	POM128 FLJ22644 Predicted protein FLJ22644	Stomach carcinoma		SEQ. ID NO: 408	SEQ. ID NO: 4

Hs.288842	OPA3 Optic atrophy 3 (autosomal recessive, with chorea and spastic paraplegia)	Lymphoma, kidney renal cell carcinoma, lung small cell carcinoma, pancreas carcinoma, choriocarcinoma, Melanoma, retinoblastoma, leiomyosarcoma, prostate carcinoma, head and neck carcinoma, parathyroid tumor, choriocarcinoma	SEQ. ID NO: 410	SEQ. ID NO: 411
Hs.290308	POM129	ovarian carcinoma, glioma, hepatocellular carcinoma, breast carcinoma, head and neck carcinoma, insulinoma, retinoblastoma	SEQ. ID NO: 412	SEQ. ID NO: 413
Hs.293678	TCBP0758 Predicted protein TCBP0758	Retinoblastoma, leiomyosarcoma, lymphoma, neuroblastoma, glioma, cervical carcinoma, pancreas carcinoma, germ cell tumors, stomach carcinoma, glioma, uterus carcinoma, lung carcinoid tumors, adrenal cortex carcinoma, ovary tumors, melanoma, lymphoblastic leukemia, colon cancer, endometrial carcinoma, neuroblastoma, breast carcinoma, head and neck neck carcinoma, nervous cell tumors, lung carcinoma, Wilms' tumor, pancreas carcinoma	SEQ. ID NO: 414	SEQ. ID NO: 4

[000102] Of the tumor associated EST's detected by the methods of the present invention, a particularly interesting group are the clusters represented by EST's found exclusively in tumor derived libraries. One striking feature of these tumor markers is their frequent occurrence in colon, lung and ovarian carcinomas. Thus, the high percentage of tumor-specific EST's is characteristic of highly malignant tumors (e.g. ovary carcinomas, metastatic breast carcinomas and small cell lung tumors. Accordingly, the methods of the present invention provide a method for predicting malignancy of a tumor based on the percentage of tumor-specific EST expression detected in such tumors. Utilizing standard molecular biology techniques as exemplified below, for example, persons of ordinary skill in the art can utilize probes for tumor associated EST's to determine the level of malignancy in a tumor tissue sample.

[000103] All three colon-specific clusters detected with the methods of the present invention represented known genes which encode apolipoprotein B mRNA editing protein APOBEC1, guanylate cyclase 2C and G protein coupled receptor 35. Both APOBEC1 and guanylate cyclase 2C mRNAs have been shown to be overexpressed in colon carcinomas (Lee et al, Gastroenterology 115(5):1096-1103 (1998); Carithers et al. Proc.Natl. Acad. Sci. USA 93(25):14827-32 (1996). Moreover, high level expression of APOBEC1 in transgenic mice and rabbit livers causes liver dysplasia and hepatocellular carcinomas and guanylate cyclase 2C appears to be relatively specific marker for the presence of metastatic colonic carcinoma cells. These observations, together with the appearance of the guanylate cyclase 2C in tumor specific clusters, indicate that this gene is a putative marker of progression of colon cancer.

## EXAMPLE 2

[000104] In order to detect the presence of a tumor associated EST in actual tissue samples, biological samples were prepared and analyzed for the presence or absence of the EST sequence. In each case, where clusters are defined by a plurality of sequences, the probes utilized are derived from the longest reported sequence for the cluster. Individual subsets of EST clusters predicted to be tumor associated with the methods of the present invention were analyzed in polymerase chain reaction studies on Clontech multiple tissues cDNA (MTC) panels and on panels of genomic DNA from different animal species. Gene or gene fragments corresponding to EST clusters Hs.133107,

Hs. 154173 and Hs. 67624 according to our computational differential display studies were expressed only in tumors. Hs. 133244 was expressed in a variety of tumors and was also expressed at very low levels in normal testis and germinal B-cells. Initially, the screening method involved a non-PCR based strategy. Such screening methods include two-step label amplification methodologies that are well known by persons of ordinary skill in the art. Both PCR and non-PCR based screening strategies can also detect target sequences with a high level of sensitivity.

[000105] A subset of EST clusters found by HSAAnalyst software was analyzed by both confirmatory PCR on Clontech Multiple Tissue cDNA Panels. PCR Amplification of the tumor associated EST Hs.133294 Fragment was analyzed in Human Tumor MTC Panel 1 and 2, Human Immune System MTC Panel, Human Fetal MTC Panel, DNA from Different Animal species, and Southern hybridization of Hs.133294 fragment with genomic DNA from different animal species digested to completion with EcoR I. Hs.133294 represents an EST protein-encoding mRNA located on chromosome 1q21. It is weakly similar in homology to IQGA (human RAS GTPase-activating-like protein IQGAP1). Hs.133294 was represented in: prostate tumor, HNSCC, breast carcinoma, oligodendroglioma, colon carcinoma, CML, lung carcinoma, ovarian carcinoma, uterus carcinoma, adrenal adenoma and «minor occurrences» in normal testis and germinal B-cells. One EST in the cluster was derived from normal testis, one from germinal B-cells and twenty-five from different tumors. Both testis and germinal B-cells as tissues are known to express tumor markers, e.g. cancer-testis antigen family members are expressed only in testis in a healthy organism, but testis expression does not interfere with the tumor marker features of such a genes. Unlike in the case of the other examples contained herein, where primers were selected from the same exon, in this case primers belong to two different exons separated by intron 672bp in size. That is why two fragments may be considered as specific to Hs.133294: a 1084 bp fragment which corresponds to unspliced mRNA and a 412 bp fragment corresponding to spliced mRNA. PCR on human tumor MTC panel produced the 1084 bp fragment on cDNAs from all eight tumors comprising the panel. The 412 bp fragment was not generated in samples from prostatic adenocarcinoma, lung carcinoma and colon adenocarcinoma propagated as xenografts in athymic nude mice. The 412 bp fragment was generated in lung carcinoma and colon adenocarcinoma which have been taken as surgical explants from metastasis and primary tumor. PCR of cDNA from testis generated the 412 bp fragment detected in normal human MTC panels 1 and 2 and weak detection of the 1084 bp fragment. No

fragments were produced on human immune system MTC panel. But on human fetal MTC panel both 1084 bp and 412 bp fragments were amplified in cDNAs from all organs and/or tissues represented in the panel. One thousand eighty four base pairs fragment corresponding to unspliced mRNA was detected in all lanes in relatively greater amounts than the 412 bp fragment. The  
5 weakest signals for both fragments were detected for fetal brain and heart.

### EXAMPLE 3

[000106] Utilizing similar methods as in Example 2, Hs.154173, a non-coding mRNA with tumor expression located in the intergenic spacer region within the rRNA encoding unit and is  
10 represented in lung carcinoma and testicular teratocarcinoma was analyzed for expression in the various tissue panels as in Example 2. PCR testing with Hs. 154173 specific primers on human tumor MTC panel resulted in amplification of an Hs.154173-specific fragment of 443 bp in the lanes corresponding to breast carcinoma and pancreatic adenocarcinoma. There was also a weak band in the lane that corresponded to prostatic adenocarcinoma.

15 [000107] In contrast, PCR analysis with the same Hs.154173-specific primers on normal human MTC panels 1 and 2, on human immune system MTC panel and human fetal MTC panel demonstrated no amplification of the corresponding fragment in any of 31 normal tissues cDNA comprising these four normal panels, indicating that this fragment is not expressed in these tissues.

### EXAMPLE 4

20 [000108] Hs.67624 is a tumor-associated non coding mRNA located on Chromosome 3 and represented in germ cell tumors and head and neck squamous cell carcinoma. The results of PCR amplification of the tumor associated EST Hs.67624 fragment in Human Tumor MTC Panel 1 and 2, Human Immune System MTC Panel, Human Fetal MTC Panel, DNA from different animal  
25 species, and Southern hybridization of Hs.67624 fragment with genomic DNA from different animal species on genomic DNA digested to completion with EcoRI. These results confirmed that HS 67624 as a tumor associated EST expressed in ovarian carcinoma. There are three human tissues that often express tumor antigens. These are thymus, testis and embryonic tissues. PCR with Hs. 67624-specific primers on human tumor MTC panel resulted in predicted amplification of 315 bp

Hs. 67624-specific fragment in ovarian carcinoma. PCR with the same Hs.67624 primers on normal human MTC panels 1 and 2 resulted in no fragments on any of 16 normal cDNA libraries comprising these panels. PCR on human immune system MTC panel and human fetal MTC panel produced signals corresponding to 315 bp fragment only on cDNA from thymus. The signal in fetal  
5 thymus was considerably stronger than for normal thymus.

#### EXAMPLE 5

[000109] Hs.133107 is a tumor associated non-coding mRNA located on chromosome 12p13. The results of PCR Amplification of the EST Hs.133107 fragment in Human Tumor MTC Panel 1  
10 and 2, Human Immune System MTC Panel, Human Fetal MTC Panel. These results confirmed that Hs. 133107 as a tumor related EST. PCR on normal Human MTC Panels 1 and 2 produced no fragments on any of cDNA from 16 normal tissues. PCR on human immune system MTC panel resulted in amplification of 344 bp fragment on cDNA from lymph node. PCR on human fetal MTC panel did not result in any fragments.

15

#### EXAMPLE 6

[000110] The results of PCR Amplification of the a nucleic acid specific for Glucose 3 phosphate dehydrogenase fragment in Human Tumor MTC Panel 1 and 2, Human Immune System MTC Panel, Human Fetal MTC Panel and DNA from different animal species was performed as in  
20 the above examples. This control demonstrated that mRNA specific for Glucose 3 phosphate dehydrogenase could be detected in a manner consistent with known expression patterns of this gene.

#### EXAMPLE 7

25 [000111] The methods of the present invention were used to detect differential expression of genes expressed in hyperosmotic stress (caused by NaCl), or dehydration in the plant *Arabidopsis thaliana*. Despite the relatively small number of ESTs and UNIGENE clusters available for this organism, 5 stress-associated clusters were detected using the methods of the present invention. Three stress-associated clusters detected in *A. thaliana* represented known plant genes involved in



stress response: GST30, Lti30 and cor15-encoding gene. The remaining clusters represented unknown genes. The applicability of the methods of the present invention to *A. thaliana* provides a prognostic model useful to determine if the relevant genes found in *A. thaliana* can be used as a hybridization templates to find orthologs in other agricultural plants and such orthologs will be useful for gene targeting etc in such important plants.

[000112] Utilizing the methods of the present invention, a database "AT Lib Registry" was constructed. This database contained descriptions of all cDNA expression libraries used to build an EST database for *A. thaliana*. Computer-based methods were used to determine mRNA sequences differentially expressed in plants under different physiological conditions including oxidative, herbicidal and other stress types. The CDD permitted an analysis of the absolute number of nucleotide sequences synthesized for transcription matrices of every type of interest in discovered samples. The CDD analysis utilized data from databases such as dbEST containing more than 110 000 EST sequences that were deduced from cDNA libraries made from *A. thaliana* cells. For every sequence in the database there was a description of source cDNA library provided. These data and the EST clustering information complete the dataset needed to describe a tissue-associated (or condition-associated) expression of transcripts of every type (or genes). The processing of large volumes of EST information was facilitated by means of a variation of the Hs.Analyst software utilized for determination of tumor-associated markers wherein the variation utilized the Hs.Analyst main module and an Arabidopsis LibRegistry, dividing the Arabidopsis libraries according to stress/non-stress categories.

[000113] The software At\_Analyst was utilized to analyze EST clustering data of the model plant *Arabidopsis thaliana* and to conduct a comparative analysis of gene expression spectra in different tissues of the plant. In this example, all data sources were divided into 3 classes named "target1", "target2" and "undefined", whereas the last class pooled data were not entered in either of first two classes.

[000114] **At\_Analyst software description.** In this example, the source data for the program were arranged in two plain text files designated "at.data" and "libraries". The file "at.data" contained cluster descriptions arranged according to individual clusters. All fields were listed each in a separate line for each EST. Each cluster description with a field "ID" which contained the

internal UniGene cluster index, the cluster gene “title” and gene name if there was significant known homology of a cluster to a known gene, the number of sequences of any type (mRNA, protein, cDNA) included in cluster and lines containing information about all individual sequences of the cluster. For each sequence there was provided a LID (Library ID) which data field was LID  
5 used to retrieve information about the EST source library, thereby allowing association of the EST sequence with a particular physiological state or growth condition.

[000115] The database “At Library Registry” was created. This database included all source cDNA clone library descriptions of 71 libraries prepared from different parts or tissues of *A. thaliana*. Every record consisted of the following fields: 1) library ID in dbEST database; 2) library  
10 name; 3) tissue source of mRNA used to prepare cDNA sequences and additional comments concerning library construction methods and physiological conditions of plant growth; 4) organism name (*A. thaliana* in the present example); 5) organism strain or ecotype; and 6) cloning vector used for library construction. In general, source tissues were derived from *A. thaliana* strains Columbia Col-0, Columbia C24, Columbia GH50, Columbia gl1, Landsberg erecta and Ohio State. Some of  
15 the libraries in the database were obtained from plant parts like aboveground organs, roots, flower buds, green siliques, immature siliques, inflorescence, rosettes, seedling hypocotyls and some from different specific cell types. There were also included a number of clone libraries made from cultured cell lines of *A. thaliana*.

[000116] All clone libraries in the At Library Registry were separated into four general types:  
20 1) “untreated” indicated clone libraries made from normal plants and its parts cultivated under normal conditions; 2) “treated” – indicated libraries made from plants subjected to any kind of stressing; 3) “low-level” indicated clone libraries prepared from genomic DNA, not on mRNA; 4) “undefined” – indicated clone libraries whose origin could not be deduced with the available information. The resulting base AT Library Registry was presented by a Microsoft Excel workbook  
25 consisting of four worksheets, one for each type of clone library class as mentioned above. The total number of sequences that were derived from clone libraries included in AT Library Registry was 113 023 ESTs.

[000117] A round of CDD was conducted when we found quantitative percentages of transcription pools volumes of plants exposed to stress conditions and plants grew in normal physiological conditions. Statistical analysis of expression spectra has revealed the quantitatively reliable differences among plants exposed to salt (hyperosmotic) stresses. The results are presented in Table 3. The conditions for comparing the clusters compared EST's from stress-induced Arabidopsis to normal plants contained EST's expressed in stress-exposed plants. Genes (clusters) of interest demonstrated to be associated with Arabidopsis stress conditions were At.11290 (glutathione S-transferase), At.5388 (liti30) and At.20845 (COR15 polypeptide).

10

**Table III** Sequences of clusters differentially expressed under salt stress conditions.

Cluster ID	Gene presented by cluster	All sequences	Protein sequences	Target sequences	Background sequences
At.5801	Arabidopsis thaliana AT3g28220/T19D11_3 mRNA, complete cds	10	2	7	1
At.5388	<i>Arabidopsis thaliana</i> (Landsberg Erecta) liti30 mRNA	13	3	8	1
At.11290	Arabidopsis thaliana chromosome I glutathione S-transferase (GST30) mRNA, complete cds	13	3	8	2
At.12464	Arabidopsis thaliana chromosome II section 206 of 255 of the complete sequence. Sequence from clones F16M14	13	1	11	1
At.20845	<i>Arabidopsis thaliana</i> mRNA for COR15 polypeptide	32	4	24	4

[00118] The methods of the present invention are also applicable to other agricultural plants that are well represented in the UniGene database. For example, as of 20 November 2001, there were 34812 sequences in 4012 clusters for *Hordeum vulgare*, 47841 sequences in 12836 clusters for *Oryza sativa*, 31826 sequences in 2744 clusters for *Triticum aestivum* and 69231 sequences in 7171 clusters for *Zea mays*. Furthermore, the methods of the present invention may be applied to other organisms additional datasets are developed that build clusters similar to UniGene database. There are 208198 sequences available for *Glycine max*, 141687 sequences for *Lycopersicon esculentum*, 137588 sequences for *Medicago truncatula*, 76645 sequences for *Sorghum bicolor* and 55637 sequences for *Solanum tuberosum*. Since about 113 000 sequences were enough to obtain statistically reliable results in our investigation it is reasonable to recommend using of CDD method for searching for stress-induced genes in the above mentioned plants as done with *Arabidopsis*.

[000119] The investigation of *Arabidopsis thaliana* associated ESTs derived from clone libraries made from the stress-exposed and normal plants revealed three genes that encoded proteins that were overexpressed-in-stress proteins (as used herein, the term "stress-overexpressed applies to the fact that 80% or more of the sequences from their clusters are derived from plant grown in stress conditions. The available clone libraries were also adequate for investigation of salt-induced stress. Thus, seven of eight total ESTs in cluster AT.5801 were derived from library m27 made from 10-14-days old shoots treated by 160mM NaCl solution for several hours. Eight of a total of nine ESTs of cluster At.11290 are also derived from this clone library. Cluster At.20845 consists of 22 ESTs from the same clone library 27, 2 ESTs from the plant parts treated by 200 mM NaCl (library numbers 15 and 40) and 4 ESTs from the parts of normal plant. Library 27 was deliberately enriched by sequences specifically expressed in salt stressed plant whereas libraries 15 and 40 were not as can be seen quite clearly from the typical stress-induced cluster structures (as e.g., At.20845). It is clear also that the CDD methods of the present invention are more productive than an experimental approach which is not sensitive enough to distinguish between low levels of expression of salt-induced genes.

[000120] One of the revealed clusters At.11290 represented the glutathione-S-transferase gene (GST30). It is known that glutathione transferases are involved in different stress-induced pathways. For example the expression of one of these transferases is increasing the plant's resistance for the aluminum abundance. Moreover, it was shown that such plants are display a

significant increase of oxidative stress resistance which can be seen when straining the plant's roots with H(2)DCFDA (Ezalki B. et al., 2001 *Plant Physiol* 2001 Nov;127(3):918-927). It is also known that the induction of glutathione-S-transferases occurs when the plant is infected with *Peronospora parasitica* or *Pseudomonas syringae* pv. Tomato, when the plant is treated by some kind of herbicides and even when the leaf structure is broken (Rairdan GJ et al., 2001 *Mol Plant Microbe Interact* 2001 Oct;14(10):1235-46; Vollenweider S et al., 2000 *Plant J* 2000 Nov;24(4):467-76). The level of glutathione-S-transferase gene also increases when the plant cells are treated with auxine, salicylic acid or hydrogenic peroxide (Chen W. Singh KB 1999 *Plant Physiol* 2001 Nov;127(3):918-927). As it can be deduced from published data the glutathione-S-transferase gene is often overexpressed under different kinds of stress conditions in plants. Nevertheless as it is shown in our work, this gene is specifically expressed under salt stress conditions and may serve as marker for this kind of stress.

[000121] The other revealed cluster At.5388 represents the gene *lti30* coding dehydrine *lti30* which synthesis is induced under the low-temperature stress but not in plants treated by abscisic acid or drought or cold (Welin B.V. et al., 1994 *Plant Mol Biol* 1994 Oct;26(1):131-44). The cluster At.20845 is representing *cor15* protein which shows even more cryoprotective activity than BSA or sacharose (Lin C, Thomashow MF, 1992 *Biochem Biophys Res Commun* 1992 Mar 31;183(3):1103-8). So far as both genes were revealed in our CDD experiments with salt stress-induced genes it might be reasonable to suppose a common underlying processes of regulation of the salt- and temperature-induced plant response.

## CLAIMS

What is claimed is:

1. A method for determining whether a nucleic acid is a marker for a predetermined phenotype or cell type of interest from a biological species which comprises:
  - 5 (a) providing a database of expressed sequence tag sequences (EST's) from the species;
  - (b) placing said EST's in groups termed clusters based on homology of EST's within each cluster;
  - (c) determining for each cluster the total number of EST's within said cluster;
  - (d) ordering said clusters sequentially based on the number of EST's in each cluster;
  - 10 (e) dividing said ordered clusters into subranges based on the number of EST's per cluster;
  - (f) determining for each cluster subrange obtained from step (e) the number EST's within said cluster which are expressed in said predetermined cell type of interest;
  - (g) calculating according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in said cell type of interest, wherein said threshold percentage is a percentage from about 10% to about 100%;
  - 15 (h) determining the number of clusters in each subrange observed to contain said predetermined threshold percentage of EST's expressed in said predetermined cell type; and
  - (i) identifying subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said
  - 20 predetermined threshold percentage for the subrange according to normal distribution;
  - wherein if the percentage of EST's expressed in said cell type of interest in a cluster identified in (i) is equal to or greater than said predetermined threshold percentage, said cluster contains a nucleic acid that is a marker for the cell type of interest.
- 25 2. The method of claim 1 wherein one or more of the steps are performed on a computer.
3. The method of claim 1 wherein the individual clusters are divided into subranges exponentially.

4. The method of claim 1 wherein the individual clusters are divided into subranges linearly.
5. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of about 50% to 100%.  
5
6. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of about 70% to 100%.
7. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in  
10 said cell type of interest is a percentage of about 80% to 100%.
8. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of about 90% to 100%.
- 15 9. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of at least 80%.
10. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of at least 90%.  
20
11. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of at least 95%.
12. The method of claim 1 wherein the predetermined threshold percentage of EST's expressed in  
25 said cell type of interest is a percentage of 100%.
13. A method as in claim 1 wherein the cell type of interest is an abnormal cell.

14. The method of claim 1 or claim 13 wherein step (i) comprises identifying subranges having an observed number of clusters meeting said predetermined threshold percentage at least five times greater than the number expected for the subrange according to normal distribution.

5

15. The method of claim 1 or claim 13 wherein step (i) comprises identifying subranges having an observed number of clusters meeting said predetermined threshold percentage at least one standard deviation greater than the number expected for the subrange according to normal distribution.

10 16. The method of claim 1 or claim 13 wherein the species is human.

17. The method of claim 16 wherein the individual clusters are divided into subranges exponentially.

15 18. The method of claim 16 wherein the individual clusters are divided into subranges exponentially.

19. The method of claim 16 wherein the predetermined threshold percentage of EST's expressed in a tumor cell is at least 90%.

20

20. The method of claim 16 wherein the predetermined threshold percentage of EST's expressed in a tumor cell is 95%.

21. The method of claim 16 wherein the predetermined threshold percentage of EST's expressed in  
25 a tumor cell is 100%.

22. A method for determining the progression of colon cancer in a human which comprises determining the level of expression of guanylate cyclase 2C in a cell, wherein if the level of



guanylate cyclase 2C expression is greater than the level of expression of guanylate cyclase 2C in normal cells, said cell is a tumor cell.

23. The method of claim 22 wherein the level of the guanylate cyclase 2C is detected by  
5 determining the level of mRNA expression for the guanylate cyclase 2C gene.

24. An isolated antibody which specifically binds to a tumor-associated antigen encoded by a nucleic acid selected from the group consisting of SEQ ID NO's 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 33, 35, 37, 39, 41, 45, 47, 55, 57, 59, 61, 63, 65, 67, 69, 73, 75, 77, 79, 81, 83, 89, 91, 93, 95,  
10 97, 99, 101, 103, 107, 109, 111, 113, 115, 117, 119, 121, 123, 127, 129, 131, 133, 135, 137, 138, 140, 142, 144, 146, 148, 150, 153, 155, 157, 158, 160, 162, 164, 166, 168, 172, 174, 176, 178, 180, 182, 184, 186, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300,  
15 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412 and 414.

25. An isolated antibody as in claim 24 wherein the nucleic acid is encoded by a sequence selected  
20 from the group consisting of SEQ ID NO's 73, 184, 186 and 242.

26. An isolated antibody as in claim 24 which further comprises a toxin.

27. A method for detecting a tumor cell which comprises detecting the expression in said cell of a  
25 tumor-associated marker, wherein said marker is a nucleic acid selected from the group of nucleic acids in claim 24.

28. A method as in claim 27 wherein the nucleic acid marker is selected from the group consisting of SEQ ID NO:'s 73, 184, 186 and 242.

29. A method for detecting a tumor cell which comprises detecting the expression in said cell of a  
5 tumor-associated marker, wherein said marker is a polypeptide selected from the group consisting  
of SEQ ID NO:'s 10, 12, 14, 16, 20, 24, 46, 28, 30, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58,  
60, 62, 64, 66, 68, 70, 71, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106,  
108, 110, 112, 114, 116, 118, 120, 124, 126, 128, 130, 132, 134, 136, 139, 141, 143, 145, 147, 149,  
151, 152, 154, 156, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 188,  
10 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228,  
231, 233, 235, 237, 239, 241, 243, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271,  
273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311,  
313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351,  
353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 379, 381, 383, 385, 387, 389, 391, 393,  
15 397, 399, 401, 403, 405, 407, 409, 411, 413 and 415.

30. A method as in claim 29 wherein the polypeptide marker is selected from the group consisting  
of sequence selected from the group consisting of SEQ ID NO:'s 74, 185, 187, 188 and 243.

20 31. A method for regulating the growth of a tumor cell which comprises altering the level of  
expression of a tumor-associated marker, wherein said marker is a nucleic acid selected from the  
group of nucleic acids of claim 24.

25 32. A method as in claim 31 wherein the nucleic acid marker is selected from the group consisting  
of sequences selected from the group consisting of SEQ ID NO:'s 73, 184, 186 and 242.

33. A method as in claim 31 wherein the level of expression of the tumor-associated marker is  
regulated with an siRNA.

34. A method for regulating the growth of a tumor cell which comprises altering the level of expression of a tumor marker, wherein said marker is a polypeptide selected from the group of polypeptides of claim 29.

5

35. A method as in claim 34 wherein the polypeptide is selected from the group consisting of sequence selected from the group consisting of SEQ ID NO:'s 74, 185, 187, 188 and 243.

36. A method for preventing the growth of a tumor cell which comprises treating the cell with an antibody specific for a tumor-associated antigen wherein the antigen comprises a polypeptide as in claim 29.

10

37. A method as in claim 34 wherein the tumor marker is a polypeptide selected from the polypeptides of SEQ ID NO:'s 74, 185, 187, 188 and 242.

15

38. A method as in claims 36 or 37 wherein said antibody further comprises a toxin.

39. An isolated polypeptide for use as an immunogen, wherein said polypeptide is selected from the group of polypeptides of claim 29.

20

39. The isolated peptide of claim 37 or 38 which comprises an epitope reactive with a Cytotoxic T-cell.

40. A method for determining whether a nucleic acid is a marker for a stress-induced phenotype in a species which comprises:

25

- (a) providing a database of expressed sequence tag sequences (EST's) from the species;
- (b) placing said EST's in groups termed clusters based on homology of EST's within each cluster;

- (c) determining for each cluster the total number of EST's within said cluster;
  - (d) ordering said clusters sequentially based on the number of EST's in each cluster;
  - (e) dividing said ordered clusters into subranges based on the number of EST's per cluster;
  - (f) determining for each cluster subrange obtained from step (e) the number EST's within  
5 said cluster which are expressed in a cell under said stress conditions;
  - (g) calculating according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in a cell under said stress conditions, wherein said threshold percentage is a percentage from about 10% to about 80%;
  - (h) determining the number of clusters in each subrange observed to contain said  
10 predetermined threshold percentage of EST's expressed in said cell; and
  - (i) identifying subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said predetermined threshold percentage for the subrange according to normal distribution;
- wherein if the percentage of EST's expressed in said cell type of interest in a cluster  
15 identified in (i) is equal to or greater than said predetermined threshold percentage, said cluster contains a nucleic acid marker that is a marker for the stress-induced phenotype.
41. The method of claim 40 wherein one or more of the steps are performed on a computer.
- 20 42. The method of claim 40 wherein the individual clusters are divided into subranges exponentially.
43. The method of claim 40 wherein the individual clusters are divided into subranges linearly.
- 25 44. The method of claim 40 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of about 80%.
45. The method of claim 40 wherein the species is *Arabidopsis*.

46. The method of claims 40 or 45 wherein the stress-induced phenotype is selected from the group consisting of hyperosmotic stress and high salt conditions.

5 47. A method for determining whether a nucleic acid is a marker for a tumor cell from a human which comprises:

- (a) providing a database of expressed sequence tag sequences (EST's) from human tumor cells and human normal cells;
- (b) placing said EST's in groups termed clusters based on homology of EST's within each  
10 cluster;
- (c) determining for each cluster the total number of EST's within said cluster;
- (d) ordering said clusters sequentially based on the number of EST's in each cluster;
- (e) dividing said ordered clusters into subranges based on the number of EST's per cluster;
- (f) determining for each cluster subrange obtained from step (e) the number EST's within  
15 said cluster which are expressed in a tumor cell;
- (g) calculating according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in said human tumor cells, wherein said threshold percentage is a percentage from about 10% to about 100%;
- (h) determining the number of clusters in each subrange observed to contain said  
20 predetermined threshold percentage of EST's expressed in a tumor cell; and
- (i) identifying subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said predetermined threshold percentage for the subrange according to normal distribution;  
wherein if the percentage of EST's expressed in said cell type of interest in a cluster  
25 identified in (i) is equal to or greater than said predetermined threshold percentage, said cluster contains a nucleic acid that is a marker for a tumor cell.

48. The method of claim 47 wherein one or more of the steps are performed on a computer.

49. The method of claim 47 wherein the individual clusters are divided into subranges exponentially.

50. The method of claim 47 wherein the individual clusters are divided into subranges linearly.

5

51. The method of claim 47 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of about 80% to 100%.

52. The method of claim 47 wherein the predetermined threshold percentage of EST's expressed in  
10 said cell type of interest is a percentage of at least 90%.

53. The method of claim 47 wherein the predetermined threshold percentage of EST's expressed in said cell type of interest is a percentage of 100%.

15 54. The method of claim 47 wherein step (i) comprises identifying subranges having an observed number of clusters meeting said predetermined threshold percentage at least five times greater than the number expected for the subrange according to normal distribution.

20 55. The method of claim 47 wherein step h consists of (i) identifying subranges having an observed number of clusters meeting said predetermined threshold percentage at least one standard deviation greater than the number expected for the subrange according to normal distribution.

## SEQUENCE LISTING

<110> Baranova, A. V.  
Yankovsky, N. K.  
Kozlov, A. P.  
Lobashev, A. V.  
Krukovskaya, L. L.

<120> In silico screening for phenotype-associated expressed sequences

<130> 2760-103

<160> 415

<170> PatentIn version 3.1

<210> 1  
<211> 24  
<212> DNA  
<213> Homo sapiens

<400> 1  
tcttttcttga tgaattatct tatg 24

<210> 2  
<211> 18  
<212> DNA  
<213> Homo sapiens

<400> 2  
acacaccctc attcccgc 18

<210> 3  
<211> 21  
<212> DNA  
<213> Homo sapiens

<400> 3  
gtcaaccttc tcattcttcct c 21

<210> 4  
<211> 20  
<212> DNA  
<213> Homo sapiens

<400> 4  
caggaagttg ggtagatgtg 20

<210> 5  
<211> 24  
<212> DNA

<213> Homo sapiens

<400> 5

taattgcatt cttcaaaatt ctac

24

<210> 6

<211> 21

<212> DNA

<213> Homo sapiens

<400> 6

gcttcgcacc attgaataaa c

21

<210> 7

<211> 23

<212> DNA

<213> Homo sapiens

<400> 7

tacatagttg ttatcttaag gtg

23

<210> 8

<211> 21

<212> DNA

<213> Homo sapiens

<400> 8

tgggaattct atacttttga c

21

<210> 9

<211> 1969

<212> DNA

<213> Homo sapiens

<400> 9

atggagctgc tcaagctgaa ccggagcgtg cagggaaaccg gacccggggcc gggggcttcc 60

ctgtgccgcc cgggggcgcc tctcctcaac agcagcagtg tgggcaacct cagctgcgag 120

ccccctcgca ttcgcggagc cgggacacga gaattggagc tggccattag aatcactctt 180

tacgcagtga tcttctgat gagcgttggg ggaaatatgc tcatcatcgt ggtcctggga 240

ctgagccgcc gcctgaggac tgtcaccaat gccttctctc tctcactggc agtcagcgac 300

ctcctgctgg ctgtggcttg catgcccttc accctcctgc ccaatctcat gggcacattc 360

atctttggca ccgtcatctg caaggcgggtt tcctacctca tgggggtgtc tgtgagtgtg 420

tccacgctaa gcctcgtggc catcgcactg gagcggtaga gcgccatctg ccgaccactg 480

caggcacgag tgtggcagac gcgctccac gcggctcgcg tgattgtagc cacgtggctg 540



```

ctgtccggac tactcatggt gccctacccc gtgtacactg tcgtgcaacc agtggggcct .600
cgtgtgctgc agtgcggtga tcgctggccc agtgcgcggg tccgccagac ctgggtccgta 660
ctgctgcttc tgctcttggt cttcatcccg ggtgtggtta tggccgtggc ctacgggctt 720
atctctcgcg agctctactt agggcttcgc tttgacggcg acagtgcagc cgacagccaa 780
agcaggggtcc gaaaccaagg cgggctgccg ggggctgttc accagaacgg gcgttgccgg 840
cctgagactg gcgcgggttg cgaagacagc gatggctgct acgtgcaact tccacgttcc 900
cggcctgccc tggagctgac ggcgctgacg gctccagggc cgggatccgg ctcccggccc 960
accaggcca agctgctggc taagaagcgc gtggtgcgaa tgttgctggt gatcgttgtg 1020
cttttttttc tgtgttggtt gccagtttat agtgccaaca cgtggcgcg ctttgatggc 1080
ccgggtgcac accgagcact ctcggtgct cctatctcct tcattcactt gctgagctac 1140
gcctcggcct gtgtcaaccc cctggtctac tgcttcatgc accgtcgctt tcgccaggcc 1200
tgcttgaaa cttgcgctcg ctgctgcccc cggcctccac gagctcgccc cagggtctctt 1260
ccgatgagg accctcccac tccctccatt gcttcgctgt ccaggcttag ctacaccacc 1320
atcagcacac tgggccctgg ctgaggagta gaggggcccgt gggggttgag gcagggcaaa 1380
tgacatgcac tgacccttcc agacatagaa aacacaaacc acaactgaca caggaaacca 1440
acacccaaag catggactaa cccaacgac aggaaaaggt agcttacctg acacaagagg 1500
aataagaatg gagcagtaca tgggaaagga ggcatgcctc tgatatggga ctgagcctgg 1560
cccatagaaa catgacactg accttgaga gacacagcgt ccctagcagt gaactatttc 1620
tacacagtgg gaactctgac aagggtgac ctgcctctca cacacataga ttaatggcac 1680
tgattgtttt agagactatg gagcctggca caggactgac tctgggatgc tcctagtttg 1740
acctcacagt gacccttccc aatcagcact gaaaatacca tcaggcctaa tctcatacct 1800
ctgaccaaca ggctgttctg cactgaaaag gttcttcac ctttccagt taaggaccgt 1860
ggccctgccc tctccttct tccaaactg ttcaagaaat aataaattgt ttggcttctt 1920
cctgaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aggaattcc 1969

```

```

<210> 10
<211> 447
<212> PRT
<213> Homo sapiens
<400> 10

```

Met Glu Leu Leu Lys Leu Asn Arg Ser Val Gln Gly Thr Gly Pro Gly  
 1 5 10 15  
 Pro Gly Ala Ser Leu Cys Arg Pro Gly Ala Pro Leu Leu Asn Ser Ser  
 20 25 30  
 Ser Val Gly Asn Leu Ser Cys Glu Pro Pro Arg Ile Arg Gly Ala Gly  
 35 40 45  
 Thr Arg Glu Leu Glu Leu Ala Ile Arg Ile Thr Leu Tyr Ala Val Ile  
 50 55 60  
 Phe Leu Met Ser Val Gly Gly Asn Met Leu Ile Ile Val Val Leu Gly  
 65 70 75 80  
 Leu Ser Arg Arg Leu Arg Thr Val Thr Asn Ala Phe Leu Leu Ser Leu  
 85 90 95  
 Ala Val Ser Asp Leu Leu Leu Ala Val Ala Cys Met Pro Phe Thr Leu  
 100 105 110  
 Leu Pro Asn Leu Met Gly Thr Phe Ile Phe Gly Thr Val Ile Cys Lys  
 115 120 125  
 Ala Val Ser Tyr Leu Met Gly Val Ser Val Ser Val Ser Thr Leu Ser  
 130 135 140  
 Leu Val Ala Ile Ala Leu Glu Arg Tyr Ser Ala Ile Cys Arg Pro Leu  
 145 150 155 160  
 Gln Ala Arg Val Trp Gln Thr Arg Ser His Ala Ala Arg Val Ile Val  
 165 170 175  
 Ala Thr Trp Leu Leu Ser Gly Leu Leu Met Val Pro Tyr Pro Val Tyr  
 180 185 190  
 Thr Val Val Gln Pro Val Gly Pro Arg Val Leu Gln Cys Val His Arg  
 195 200 205  
 Trp Pro Ser Ala Arg Val Arg Gln Thr Trp Ser Val Leu Leu Leu Leu  
 210 215 220

Leu Leu Phe Phe Ile Pro Gly Val Val Met Ala Val Ala Tyr Gly Leu  
 225 230 235 240  
 Ile Ser Arg Glu Leu Tyr Leu Gly Leu Arg Phe Asp Gly Asp Ser Asp  
 245 250 255  
 Ser Asp Ser Gln Ser Arg Val Arg Asn Gln Gly Gly Leu Pro Gly Ala  
 260 265 270  
 Val His Gln Asn Gly Arg Cys Arg Pro Glu Thr Gly Ala Val Gly Glu  
 275 280 285  
 Asp Ser Asp Gly Cys Tyr Val Gln Leu Pro Arg Ser Arg Pro Ala Leu  
 290 295 300  
 Glu Leu Thr Ala Leu Thr Ala Pro Gly Pro Gly Ser Gly Ser Arg Pro  
 305 310 315 320  
 Thr Gln Ala Lys Leu Leu Ala Lys Lys Arg Val Val Arg Met Leu Leu  
 325 330 335  
 Val Ile Val Val Leu Phe Phe Leu Cys Trp Leu Pro Val Tyr Ser Ala  
 340 345 350  
 Asn Thr Trp Arg Ala Phe Asp Gly Pro Gly Ala His Arg Ala Leu Ser  
 355 360 365  
 Gly Ala Pro Ile Ser Phe Ile His Leu Leu Ser Tyr Ala Ser Ala Cys  
 370 375 380  
 Val Asn Pro Leu Val Tyr Cys Phe Met His Arg Arg Phe Arg Gln Ala  
 385 390 395 400  
 Cys Leu Glu Thr Cys Ala Arg Cys Cys Pro Arg Pro Pro Arg Ala Arg  
 405 410 415  
 Pro Arg Ala Leu Pro Asp Glu Asp Pro Pro Thr Pro Ser Ile Ala Ser  
 420 425 430  
 Leu Ser Arg Leu Ser Tyr Thr Thr Ile Ser Thr Leu Gly Pro Gly  
 435 440 445

<210> 11  
 <211> 2091  
 <212> DNA  
 <213> Homo sapiens

<400> 11  
 atgactggag tctttgacag tctagtggct gatatgcact cgaccagat cgccgcctcc 60  
 agcacgtacc accagacca gcagcccccg agcggcggcg gcgccggccc ggggtggcaac 120  
 agcagcagca gcagcagcct ccacaagccc caggagtcgc ccacccttcc ggtgtccacc 180  
 gccaccgaca gcagctacta caccaaccag cagcaccg cgggcggcgg cggcggcggg 240  
 ggctcgccct acgcgcacat gggttcctac cagtaccaag ccagcggcct caacaacgtc 300  
 ccttactccg ccaagagcag ctatgacctg ggctacaccg ccgcctacac ctctacgct 360  
 ccctatggaa ccagttcgtc ccagccaac aacgagcctg agaaggagga ccttgagcct 420  
 gaaattcgga tagtgaacgg gaagccaaag aaagtccgga aacccgcac catctactcc 480  
 agtttccagc tggcggctct tcagcggcgt ttccaaaaga ctcagtactt ggccttgccg 540  
 gagcgagccg agctggcggc ctctctgggc ctacccaga ctcaggtcaa aatctggttc 600  
 cagaaccgcc ggtccaagtt caagaagatg tggaaaagtg gtgagatccc ctcgagcag 660  
 caccctgggg ccagcgcttc tccaccttgt gcttcgccgc cagtctcagc gccggcctcc 720  
 tgggactttg gtgtgccgca gcggatggcg ggcggcggtg gtccgggcag tggcggcagc 780  
 ggcgcgggca gctcgggctc cagcccagac agcgcggcct cggcttttct gggcaactac 840  
 ccctgggtacc accagacctc gggatccgcc tcacacctgc aggccacggc gccgtgctg 900  
 caccacctc agaccccgca gccgcatcac caccaccacc atcacggcgg cgggggcgcc 960  
 ccggtgagcg cggggacgat tttctaacc cagggagaac tcgccagaga ctgagagcag 1020  
 agaccactta tcctcattgc ttaccccgag ccgggggttc ctctcccgg cccgtgccc 1080  
 ccaccacct ctctgcagg ctgcgacctg cagtggcccg tctcaggccc tgctcactcc 1140  
 cggggccacc aaacgggccc ctctctcggg ggaaccggac agcagcttgg caaaggcctc 1200  
 cctaaaaggc cgcatttctg acctgagccc cgggtctcgg ctgtttcgag cccgcctcg 1260  
 gacttgccct ccctcccctc cgggtgagcc tgtctggcgc cttcctcgcc ccgggctgag 1320  
 agctgggtcc cgggagatgg aagcctccca ggcgcgcgag gcttcccgg cgctctgagg 1380  
 cttctttctc ctgcgccgt cccctgggct cagctcggac gctgcagtta ttgacctccc 1440  
 ggtcccgcct gccgcctc cccacgtgg ccccttgacc cgggcggccc cgccgcttct 1500

```

ttccttcttg cagttcccag ccctcggagc ccccatccct tatcttagcc ccaccgcgct 1560
ccccaggag cgctccctca gctctctcct catccatcac cagtggagtt tttttatttt 1620
ttattttttt aaaagtttag gtgcctttgc ggatgacctc attttgacgt tgaaaaaatg 1680
attttttaat atgtgaacac tgcaaaaatg tgtttaaatt atctttttta aaacctattc 1740
aggattatta gcctggactt ggacacagag tttgtaaata aagggtgtctg tgcagatttt 1800
ccactgatt tatttgtata aaaatactca tcttttcaga cttttttgta aacccccagt 1860
tgtgaaaact gcagtttagc agtgacctca gcaaccctc ctttttattt tttcctttaa 1920
aaacatttca gttaaattaa gctactgatt tggatttggt ttatcgtatc ctaaagtctt 1980
tgttgttgaa atgaaaggta ttttgggggt atttattatg aaaacaacat gctcttaatg 2040
ttgattttac aatatgaaga gattatttaa ataaattatt gttttcattg g 2091

```

<210> 12  
 <211> 328  
 <212> PRT  
 <213> Homo sapiens

<400> 12

```

Met Thr Gly Val Phe Asp Ser Leu Val Ala Asp Met His Ser Thr Gln
1           5           10           15

```

```

Ile Ala Ala Ser Ser Thr Tyr His Gln His Gln Gln Pro Pro Ser Gly
          20           25           30

```

```

Gly Gly Ala Gly Pro Gly Gly Asn Ser Ser Ser Ser Ser Ser Leu His
35           40           45

```

```

Lys Pro Gln Glu Ser Pro Thr Leu Pro Val Ser Thr Ala Thr Asp Ser
50           55           60

```

```

Ser Tyr Tyr Thr Asn Gln Gln His Pro Ala Gly Gly Gly Gly Gly Gly
65           70           75           80

```

```

Gly Ser Pro Tyr Ala His Met Gly Ser Tyr Gln Tyr Gln Ala Ser Gly
          85           90           95

```

```

Leu Asn Asn Val Pro Tyr Ser Ala Lys Ser Ser Tyr Asp Leu Gly Tyr
100           105           110

```

Thr Ala Ala Tyr Thr Ser Tyr Ala Pro Tyr Gly Thr Ser Ser Ser Pro  
 115 120 125

Ala Asn Asn Glu Pro Glu Lys Glu Asp Leu Glu Pro Glu Ile Arg Ile  
 130 135 140

Val Asn Gly Lys Pro Lys Lys Val Arg Lys Pro Arg Thr Ile Tyr Ser  
 145 150 155 160

Ser Phe Gln Leu Ala Ala Leu Gln Arg Arg Phe Gln Lys Thr Gln Tyr  
 165 170 175

Leu Ala Leu Pro Glu Arg Ala Glu Leu Ala Ala Ser Leu Gly Leu Thr  
 180 185 190

Gln Thr Gln Val Lys Ile Trp Phe Gln Asn Arg Arg Ser Lys Phe Lys  
 195 200 205

Lys Met Trp Lys Ser Gly Glu Ile Pro Ser Glu Gln His Pro Gly Ala  
 210 215 220

Ser Ala Ser Pro Pro Cys Ala Ser Pro Pro Val Ser Ala Pro Ala Ser  
 225 230 235 240

Trp Asp Phe Gly Val Pro Gln Arg Met Ala Gly Gly Gly Gly Pro Gly  
 245 250 255

Ser Gly Gly Ser Gly Ala Gly Ser Ser Gly Ser Ser Pro Ser Ser Ala  
 260 265 270

Ala Ser Ala Phe Leu Gly Asn Tyr Pro Trp Tyr His Gln Thr Ser Gly  
 275 280 285

Ser Ala Ser His Leu Gln Ala Thr Ala Pro Leu Leu His Pro Thr Gln  
 290 295 300

Thr Pro Gln Pro His His His His His His His Gly Gly Gly Gly Ala  
 305 310 315 320

Pro Val Ser Ala Gly Thr Ile Phe  
 325

<210> 13  
 <211> 879  
 <212> DNA  
 <213> Homo sapiens

<400> 13  
 tgaattcgtg ggacagagca ccatgacttc tgagaaaggt ccttcaaccg gtgaccccccac 60  
 tctgaggaga agaatcgaac cctgggagtt tgacgtcttc tatgacccca gagaacttcg 120  
 taaagaggcc tgtctgctct acgaatcaa gtggggcatg agccggaaga tctggcgaag 180  
 ctcaggcaaa aacaccacca atcacgtgga agttaatttt ataaaaaat ttacgtcaga 240  
 aagagatttt caccatcca tgagctgctc catcacctgg ttcttgtcct ggagtcctg 300  
 ctgggaatgc tcccaggcta ttagagagtt tctgagtcgg caccctggtg tgactctagt 360  
 gatctacgta gctcggcttt tttggcacat ggatcaacaa aatcggcaag gtctcaggga 420  
 ccttgtaaac agtggagtaa ctattcagat tatgagagca tcagagtatt atcactgctg 480  
 gaggaatttt gtcaactacc cacctgggga tgaagctcac tggccacaat acccacctct 540  
 gtggatgatg ttgtacgcac tggagctgca ctgcataatt ctaagtcttc caccctgttt 600  
 aaagatttca agaagatggc aaaatcatct tacatTTTTc agacttcac ttcaaaactg 660  
 ccattaccaa acgattccgc cacacatcct ttagctaca gggctgatac atccttctgt 720  
 ggcttggaaga tgaataggat gattccgtgt gtgtactgat tcaagaacaa gcaatgatga 780  
 cccactaaag agtgaatgcc atttagaatc tagaaatggt cacaaggtac cccaaaactc 840  
 tgtagcttaa accaacaata aatatgtatt acctctggc 879

<210> 14  
 <211> 236  
 <212> PRT  
 <213> Homo sapiens

<400> 14

Met Thr Ser Glu Lys Gly Pro Ser Thr Gly Asp Pro Thr Leu Arg Arg  
 1 5 10 15

Arg Ile Glu Pro Trp Glu Phe Asp Val Phe Tyr Asp Pro Arg Glu Leu  
 20 25 30

Arg Lys Glu Ala Cys Leu Leu Tyr Glu Ile Lys Trp Gly Met Ser Arg  
 35 40 45

Lys Ile Trp Arg Ser Ser Gly Lys Asn Thr Thr Asn His Val Glu Val  
 50 55 60  
 Asn Phe Ile Lys Lys Phe Thr Ser Glu Arg Asp Phe His Pro Ser Met  
 65 70 75 80  
 Ser Cys Ser Ile Thr Trp Phe Leu Ser Trp Ser Pro Cys Trp Glu Cys  
 85 90 95  
 Ser Gln Ala Ile Arg Glu Phe Leu Ser Arg His Pro Gly Val Thr Leu  
 100 105 110  
 Val Ile Tyr Val Ala Arg Leu Phe Trp His Met Asp Gln Gln Asn Arg  
 115 120 125  
 Gln Gly Leu Arg Asp Leu Val Asn Ser Gly Val Thr Ile Gln Ile Met  
 130 135 140  
 Arg Ala Ser Glu Tyr Tyr His Cys Trp Arg Asn Phe Val Asn Tyr Pro  
 145 150 155 160  
 Pro Gly Asp Glu Ala His Trp Pro Gln Tyr Pro Pro Leu Trp Met Met  
 165 170 175  
 Leu Tyr Ala Leu Glu Leu His Cys Ile Ile Leu Ser Leu Pro Pro Cys  
 180 185 190  
 Leu Lys Ile Ser Arg Arg Trp Gln Asn His Leu Thr Phe Phe Arg Leu  
 195 200 205  
 His Leu Gln Asn Cys His Tyr Gln Thr Ile Pro Pro His Ile Leu Leu  
 210 215 220  
 Ala Thr Gly Leu Ile His Pro Ser Val Ala Trp Arg  
 225 230 235

<210> 15  
 <211> 1718  
 <212> DNA  
 <213> Homo sapiens

<400> 15  
 cagttaccgg gagaggctgt gtcaaaggcg ccatgagcaa gatcagcgag gccgtgaagc

60



gcgcccgcgc cgccttcagc tcgggcagga cccgtccgct gcagttccgg atccagcagc 120  
 tggaggcgct gcagcgctg atccaggagc aggagcagga gctggtgggc gcgctggccg 180  
 cagacctgca caagaatgaa tggaacgcct actatgagga ggtggtgtac gtcctagagg 240  
 agatcgagta catgatccag aagctccctg agtgggcccgc ggatgagccc gtggagaaga 300  
 cgccccagac tcagcaggac gagctctaca tccactcgga gccactgggc gtggtcctcg 360  
 tcattggcac ctggaactac cccttcaacc tcaccatcca gcccatgggtg ggcgccatcg 420  
 ctgcagggaa cgcagtggtc ctcaagccct cggagctgag tgagaacatg gcgagcctgc 480  
 tggctaccat catccccag tacctggaca aggatctgta ccagtaatc aatgggggtg 540  
 tccctgagac cacggagctg ctcaaggaga ggttcgacca tatcctgtac acgggcagca 600  
 cgggggtggg gaagatcatc atgacggctg ctgccaagca cctgaccctt gtcacgtggtg 660  
 agctgggagg gaagagtccc tgctacgtgg acaagaactg tgacctggac gtggcctgcc 720  
 gacgcatcgc ctgggggaaa ttcatgaaca gtggccagac ctgcgtggcc ccagactaca 780  
 tcctctgtga cccctcgatc cagaaccaa ttgtggagaa gctcaagaag tactgaaag 840  
 agttctacgg ggaagatgct aagaaatccc gggactatgg aagaatcatt agtggccggc 900  
 acttccagag ggtgatgggc ctgattgagg gccagaaggt ggcttatggg ggcaccgggg 960  
 atgccgccac tcgctacata gccccacca tcctcacgga cgtggacccc cagtccccgg 1020  
 tgatgcaaga ggagatcttc gggcctgtgc tgccatcgt gtgcgtgcgc agcctggagg 1080  
 aggccatcca gttcatcaac cagcgtgaga agcccctggc cctctacatg ttctccagca 1140  
 acgacaaggt gattaagaag atgattgcag agacatccag tgggtggggtg gcggccaacg 1200  
 atgtcatcgt ccacatcacc ttgcactctc tgcccttcgg gggcgtgggg aacagcggca 1260  
 tgggatccta ccatggcaag aagagcttcg agactttctc tcaccgccgc tcttgctgtg 1320  
 tgaggcctct gatgaatgat gaaggcctga aggtcagata ccccccagc ccggccaaga 1380  
 tgaccagca ctgaggagg gttgctccgc ctggcctggc catactgtgt cccatcggag 1440  
 tgcggaaccac cctcactggc tctcctggcc ctgggagaat cgctcctgca gcccagccc 1500  
 agccccactc ctctgctgac ctgctgacct gtgcacaccc cactcccaca tgggcccagg 1560  
 cctcaccatt ccaagtctcc acccctttct agaccaataa agagacaaat acaattttct 1620  
 aactcagcaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1680  
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aacccccg 1718

<210> 16  
 <211> 453  
 <212> PRT  
 <213> Homo sapiens

<400> 16

Met Ser Lys Ile Ser Glu Ala Val Lys Arg Ala Arg Ala Ala Phe Ser  
 1 5 10 15

Ser Gly Arg Thr Arg Pro Leu Gln Phe Arg Ile Gln Gln Leu Glu Ala  
 20 25 30

Leu Gln Arg Leu Ile Gln Glu Gln Glu Gln Leu Val Gly Ala Leu  
 35 40 45

Ala Ala Asp Leu His Lys Asn Glu Trp Asn Ala Tyr Tyr Glu Glu Val  
 50 55 60

Val Tyr Val Leu Glu Glu Ile Glu Tyr Met Ile Gln Lys Leu Pro Glu  
 65 70 75 80

Trp Ala Ala Asp Glu Pro Val Glu Lys Thr Pro Gln Thr Gln Gln Asp  
 85 90 95

Glu Leu Tyr Ile His Ser Glu Pro Leu Gly Val Val Leu Val Ile Gly  
 100 105 110

Thr Trp Asn Tyr Pro Phe Asn Leu Thr Ile Gln Pro Met Val Gly Ala  
 115 120 125

Ile Ala Ala Gly Asn Ala Val Val Leu Lys Pro Ser Glu Leu Ser Glu  
 130 135 140

Asn Met Ala Ser Leu Leu Ala Thr Ile Ile Pro Gln Tyr Leu Asp Lys  
 145 150 155 160

Asp Leu Tyr Pro Val Ile Asn Gly Gly Val Pro Glu Thr Thr Glu Leu  
 165 170 175

Leu Lys Glu Arg Phe Asp His Ile Leu Tyr Thr Gly Ser Thr Gly Val  
 180 185 190

Gly Lys Ile Ile Met Thr Ala Ala Ala Lys His Leu Thr Pro Val Thr

195	200	205
Leu Glu Leu Gly Gly Lys Ser Pro Cys Tyr Val Asp Lys Asn Cys Asp 210 215 220		
Leu Asp Val Ala Cys Arg Arg Ile Ala Trp Gly Lys Phe Met Asn Ser 225 230 235 240		
Gly Gln Thr Cys Val Ala Pro Asp Tyr Ile Leu Cys Asp Pro Ser Ile 245 250 255		
Gln Asn Gln Ile Val Glu Lys Leu Lys Lys Ser Leu Lys Glu Phe Tyr 260 265 270		
Gly Glu Asp Ala Lys Lys Ser Arg Asp Tyr Gly Arg Ile Ile Ser Ala 275 280 285		
Arg His Phe Gln Arg Val Met Gly Leu Ile Glu Gly Gln Lys Val Ala 290 295 300		
Tyr Gly Gly Thr Gly Asp Ala Ala Thr Arg Tyr Ile Ala Pro Thr Ile 305 310 315 320		
Leu Thr Asp Val Asp Pro Gln Ser Pro Val Met Gln Glu Glu Ile Phe 325 330 335		
Gly Pro Val Leu Pro Ile Val Cys Val Arg Ser Leu Glu Glu Ala Ile 340 345 350		
Gln Phe Ile Asn Gln Arg Glu Lys Pro Leu Ala Leu Tyr Met Phe Ser 355 360 365		
Ser Asn Asp Lys Val Ile Lys Lys Met Ile Ala Glu Thr Ser Ser Gly 370 375 380		
Gly Val Ala Ala Asn Asp Val Ile Val His Ile Thr Leu His Ser Leu 385 390 395 400		
Pro Phe Gly Gly Val Gly Asn Ser Gly Met Gly Ser Tyr His Gly Lys 405 410 415		
Lys Ser Phe Glu Thr Phe Ser His Arg Arg Ser Cys Leu Val Arg Pro		

420

425

430

Leu Met Asn Asp Glu Gly Leu Lys Val Arg Tyr Pro Pro Ser Pro Ala  
 435 440 445

Lys Met Thr Gln His  
 450

<210> 17  
 <211> 3745  
 <212> DNA  
 <213> Homo sapiens

<400> 17  
 cgcaaagcaa gtgggcacaa ggagtatggt tctaactga ttgggggtcat gaagacgttg 60  
 ctggttgact tggctttgtg gtcactgctc ttccagcccg ggtggctgtc ctttagttcc 120  
 caggtgagtc agaactgcca caatggcagc tatgaaatca gcgtcctgat gatgggcaac 180  
 tcagcctttg cagagcccct gaaaaacttg gaagatgcgg tgaatgaggg gctggaaata 240  
 gtgagaggac gtctgcaaaa tgctggccta aatgtgactg tgaacgctac tttcatgtat 300  
 tcggatggtc tgattcataa ctcaggcgac tgccggagta gcacctgtga aggcctcgac 360  
 ctactcagga aaatttcaaa tgcacaacgg atgggctgtg tcctcatagg gccctcatgt 420  
 acatactcca ccttccagat gtacottgac acagaattga gctaccccat gatctcagct 480  
 ggaagttttg gattgtcatg tgactataaa gaaaccttaa ccaggctgat gtctccagct 540  
 agaaagtga tgtacttctt ggttaacttt tggaaaacca acgatctgcc cttcaaaact 600  
 tattcctgga gcacttcgta tgtttacaag aatggtacag aaactgagga ctgtttctgg 660  
 taccttaatg ctctggaggc tagcgtttcc tatttctccc acgaactcgg ctttaagggtg 720  
 gtgttaagac aagataagga gtttcaggat atcttaatgg accacaacag gaaaagcaat 780  
 gtgattatta tgtgtggtgg tccagagttc ctctacaagc tgaagggtga ccgagcagtg 840  
 gctgaagaca ttgtcattat tctagtggat cttttcaatg accagtactt ggaggacaat 900  
 gtcacagccc ctgactatat gaaaaatgtc cttgttctga cgctgtctcc tgggaattcc 960  
 cttctaaata gctctttctc caggaatcta tcaccaacaa aacgagactt tgctcttgcc 1020  
 tatttgaatg gaatcctgct ctttggacat atgctgaaga tatttcttga aaatggagaa 1080  
 aatattacca cccccaatt tgctcatgct ttcaggaatc tcaacttttga agggatatgac 1140  
 ggtccagtga ccttggtatga ctggggggat gttgacagta ccatgggtgct tctgtatacc 1200

tctgtggaca ccaagaaata caaggttctt ttgacctatg ataccacgt aaataagacc	1260
tatcctgtgg atatgagccc cacattcact tggaagaact ctaaacttcc taatgatatt	1320
acaggccggg gccctcagat cctgatgatt gcagtcttca ccctcactgg agctgtggtg	1380
ctgctcctgc tcgtcgtctt cctgatgctc agaaaatata gaaaagatta tgaacttcgt	1440
cagaaaaaat ggtccacat tcctcctgaa aatatctttc ctctggagac caatgagacc	1500
aatcatgita gcctcaagat cgatgatgac aaaagacgag atacaatcca gagactacga	1560
cagtgc aaat acgacaaaaa gcgagtgatt ctcaaagatc tcaagcacia tgatggtaat	1620
ttcactgaaa aacagaagat agaattgaac aagttgcttc agattgacta ttacaacctg	1680
accaagttct acggcacagt gaaacttgat accatgatct tcgggggtgat agaatactgt	1740
gagagaggat ccctccggga agttttaaat gacacaattt cctaccctga tggcacattc	1800
atggattggg agtttaagat ctctgtcttg tatgacattg ctaagggaat gtcatatctg	1860
cactccagta agacagaagt ccatggctgt ctgaaatcta ccaactgcgt agtggacagt	1920
agaatggtgg tgaagatcac tgattttggc tgcaattcca ttttacctcc aaaaaaggac	1980
ctgtggacag ctccagagca cctccgcaa gccaacatct ctgagaaagg agatgtgtac	2040
agctatggga tcatcgaca ggagatcatt ctgcggaaag aaaccttcta cactttgagc	2100
tgtcgggacc ggaatgagaa gattttcaga gtggaaaatt ccaatggaat gaaacccttc	2160
cgcccagatt tattcttggg aacagcagag gaaaaagagc tagaagtgtg cctacttgta	2220
aaaaactgtt gggaggaaga tccagaaaag agaccagatt tcaaaaaaat tgagactaca	2280
cttgccaaga tatttgact ttttcatgac caaaaaaatg aaagctatat ggataccttg	2340
atccgacgtc tacagctata ttctcgaaac ctggaacatc tggtagagga aaggacacag	2400
ctgtacaagg cagagaggga cagggctgac agacttaact ttatgttgct tccaaggcta	2460
gtggtaaagt ctctgaagga gaaaggcttt gtggagccgg aactatatga ggaagttaca	2520
atctacttca gtgacattgt aggtttcact actatctgca aatacagcac ccccatggaa	2580
gtggtggaca tgcttaatga catctataag agttttgacc acattgttga tcatcatgat	2640
gtctacaagg tggaaacat cggatgatgcg tacatggtgg ctagtggttt gcctaagaga	2700
aatggcaatc ggcattgcaat agacattgcc aagatggcct tggaaatcct cagcttcatg	2760
gggacctttg agctggagca tcttcctggc ctcccaatat ggattcgcat tggagttcac	2820
tctggtccct gtgctgctgg agttgtggga atcaagatgc ctggttattg tctatttgga	2880

gatacgggtca acacagcctc taggatggaa tccactggcc tccctttgag aattcacgtg 2940  
 agtgggtcca ccatagccat cctgaagaga actgagtgcc agttccttta tgaagtgaga 3000  
 ggagaaacat acttaaaggg aagaggaaat gagactacct actggctgac tgggatgaag 3060  
 gaccagaaat tcaacctgcc aaccctcct actgtggaga atcaacagcg tttgcaagca 3120  
 gaattttcag acatgattgc caactcttta cagaaaagac aggcagcagg gataagaagc 3180  
 caaaaaccca gacgggtagc cagctataaa aaaggcactc tggaatactt gcagctgaat 3240  
 accacagaca aggagagcac ctatttttaa acctaaatga ggtataagga ctcacacaaa 3300  
 ttaaaaataca gctgcactga ggcagcgacc tcaagtgtcc tgaaagctta cattttcctg 3360  
 agacctcaat gaagcagaaa tgtacttagg cttggctgcc ctgtctggaa catggacttt 3420  
 .cttgcataaa tcagatgtgt gttctcagt aaataactac cttccactct ggaaccttat 3480  
 tccagcagtt gttccaggga gcttctacct ggaaaagaaa agaaatgaat agactatcta 3540  
 gaacttgaga agattttatt cttatttcat ttattttttg tttgtttatt tttatcgttt 3600  
 ttgtttactg gctttccttc tgtattcata agatttttta aattgtcata attatatatt 3660  
 aaatacccat cttcattaaa gtatatatta ctcataattt ttgcagaaaa tatgctatat 3720  
 . attaggcaag aataaaagct aaagg 3745

<210> 18  
 <211> 1073  
 <212> PRT  
 <213> Homo sapiens

<400> 18

Met Lys Thr Leu Leu Leu Asp Leu Ala Leu Trp Ser Leu Leu Phe Gln  
 1 5 10 15

Pro Gly Trp Leu Ser Phe Ser Ser Gln Val Ser Gln Asn Cys His Asn  
 20 25 30

Gly Ser Tyr Glu Ile Ser Val Leu Met Met Gly Asn Ser Ala Phe Ala  
 35 40 45

Glu Pro Leu Lys Asn Leu Glu Asp Ala Val Asn Glu Gly Leu Glu Ile  
 50 55 60

Val Arg Gly Arg Leu Gln Asn Ala Gly Leu Asn Val Thr Val Asn Ala  
 65 70 75 80

Thr Phe Met Tyr Ser Asp Gly Leu Ile His Asn Ser Gly Asp Cys Arg  
                             85                            90                            95

Ser Ser Thr Cys Glu Gly Leu Asp Leu Leu Arg Lys Ile Ser Asn Ala  
                             100                            105                            110

Gln Arg Met Gly Cys Val Leu Ile Gly Pro Ser Cys Thr Tyr Ser Thr  
                             115                            120                            125

Phe Gln Met Tyr Leu Asp Thr Glu Leu Ser Tyr Pro Met Ile Ser Ala  
                             130                            135                            140

Gly Ser Phe Gly Leu Ser Cys Asp Tyr Lys Glu Thr Leu Thr Arg Leu  
                             145                            150                            155                            160

Met Ser Pro Ala Arg Lys Leu Met Tyr Phe Leu Val Asn Phe Trp Lys  
                             165                            170                            175

Thr Asn Asp Leu Pro Phe Lys Thr Tyr Ser Trp Ser Thr Ser Tyr Val  
                             180                            185                            190

Tyr Lys Asn Gly Thr Glu Thr Glu Asp Cys Phe Trp Tyr Leu Asn Ala  
                             195                            200                            205

Leu Glu Ala Ser Val Ser Tyr Phe Ser His Glu Leu Gly Phe Lys Val  
                             210                            215                            220

Val Leu Arg Gln Asp Lys Glu Phe Gln Asp Ile Leu Met Asp His Asn  
                             225                            230                            235                            240

Arg Lys Ser Asn Val Ile Ile Met Cys Gly Gly Pro Glu Phe Leu Tyr  
                             245                            250                            255

Lys Leu Lys Gly Asp Arg Ala Val Ala Glu Asp Ile Val Ile Ile Leu  
                             260                            265                            270

Val Asp Leu Phe Asn Asp Gln Tyr Leu Glu Asp Asn Val Thr Ala Pro  
                             275                            280                            285

Asp Tyr Met Lys Asn Val Leu Val Leu Thr Leu Ser Pro Gly Asn Ser  
                             290                            295                            300

Leu Leu Asn Ser Ser Phe Ser Arg Asn Leu Ser Pro Thr Lys Arg Asp  
 305 310 315 320  
 Phe Ala Leu Ala Tyr Leu Asn Gly Ile Leu Leu Phe Gly His Met Leu  
 325 330 335  
 Lys Ile Phe Leu Glu Asn Gly Glu Asn Ile Thr Thr Pro Lys Phe Ala  
 340 345 350  
 His Ala Phe Arg Asn Leu Thr Phe Glu Gly Tyr Asp Gly Pro Val Thr  
 355 360 365  
 Leu Asp Asp Trp Gly Asp Val Asp Ser Thr Met Val Leu Leu Tyr Thr  
 370 375 380  
 Ser Val Asp Thr Lys Lys Tyr Lys Val Leu Leu Thr Tyr Asp Thr His  
 385 390 395 400  
 Val Asn Lys Thr Tyr Pro Val Asp Met Ser Pro Thr Phe Thr Trp Lys  
 405 410 415  
 Asn Ser Lys Leu Pro Asn Asp Ile Thr Gly Arg Gly Pro Gln Ile Leu  
 420 425 430  
 Met Ile Ala Val Phe Thr Leu Thr Gly Ala Val Val Leu Leu Leu Leu  
 435 440 445  
 Val Ala Leu Leu Met Leu Arg Lys Tyr Arg Lys Asp Tyr Glu Leu Arg  
 450 455 460  
 Gln Lys Lys Trp Ser His Ile Pro Pro Glu Asn Ile Phe Pro Leu Glu  
 465 470 475 480  
 Thr Asn Glu Thr Asn His Val Ser Leu Lys Ile Asp Asp Asp Lys Arg  
 485 490 495  
 Arg Asp Thr Ile Gln Arg Leu Arg Gln Cys Lys Tyr Asp Lys Lys Arg  
 500 505 510  
 Val Ile Leu Lys Asp Leu Lys His Asn Asp Gly Asn Phe Thr Glu Lys  
 515 520 525



Gln Lys Ile Glu Leu Asn Lys Leu Leu Gln Ile Asp Tyr Tyr Asn Leu  
 530 535 540

Thr Lys Phe Tyr Gly Thr Val Lys Leu Asp Thr Met Ile Phe Gly Val  
 545 550 555 560

Ile Glu Tyr Cys Glu Arg Gly Ser Leu Arg Glu Val Leu Asn Asp Thr  
 565 570 575

Ile Ser Tyr Pro Asp Gly Thr Phe Met Asp Trp Glu Phe Lys Ile Ser  
 580 585 590

Val Leu Tyr Asp Ile Ala Lys Gly Met Ser Tyr Leu His Ser Ser Lys  
 595 600 605

Thr Glu Val His Gly Arg Leu Lys Ser Thr Asn Cys Val Val Asp Ser  
 610 615 620

Arg Met Val Val Lys Ile Thr Asp Phe Gly Cys Asn Ser Ile Leu Pro  
 625 630 635 640

Pro Lys Lys Asp Leu Trp Thr Ala Pro Glu His Leu Arg Gln Ala Asn  
 645 650 655

Ile Ser Gln Lys Gly Asp Val Tyr Ser Tyr Gly Ile Ile Ala Gln Glu  
 660 665 670

Ile Ile Leu Arg Lys Glu Thr Phe Tyr Thr Leu Ser Cys Arg Asp Arg  
 675 680 685

Asn Glu Lys Ile Phe Arg Val Glu Asn Ser Asn Gly Met Lys Pro Phe  
 690 695 700

Arg Pro Asp Leu Phe Leu Glu Thr Ala Glu Glu Lys Glu Leu Glu Val  
 705 710 715 720

Tyr Leu Leu Val Lys Asn Cys Trp Glu Glu Asp Pro Glu Lys Arg Pro  
 725 730 735

Asp Phe Lys Lys Ile Glu Thr Thr Leu Ala Lys Ile Phe Gly Leu Phe  
 740 745 750

His Asp Gln Lys Asn Glu Ser Tyr Met Asp Thr Leu Ile Arg Arg Leu  
 755 760 765

Gln Leu Tyr Ser Arg Asn Leu Glu His Leu Val Glu Glu Arg Thr Gln  
 770 775 780

Leu Tyr Lys Ala Glu Arg Asp Arg Ala Asp Arg Leu Asn Phe Met Leu  
 785 790 795 800

Leu Pro Arg Leu Val Val Lys Ser Leu Lys Glu Lys Gly Phe Val Glu  
 805 810 815

Pro Glu Leu Tyr Glu Glu Val Thr Ile Tyr Phe Ser Asp Ile Val Gly  
 820 825 830

Phe Thr Thr Ile Cys Lys Tyr Ser Thr Pro Met Glu Val Val Asp Met  
 835 840 845

Leu Asn Asp Ile Tyr Lys Ser Phe Asp His Ile Val Asp His His Asp  
 850 855 860

Val Tyr Lys Val Glu Thr Ile Gly Asp Ala Tyr Met Val Ala Ser Gly  
 865 870 875 880

Leu Pro Lys Arg Asn Gly Asn Arg His Ala Ile Asp Ile Ala Lys Met  
 885 890 895

Ala Leu Glu Ile Leu Ser Phe Met Gly Thr Phe Glu Leu Glu His Leu  
 900 905 910

Pro Gly Leu Pro Ile Trp Ile Arg Ile Gly Val His Ser Gly Pro Cys  
 915 920 925

Ala Ala Gly Val Val Gly Ile Lys Met Pro Arg Tyr Cys Leu Phe Gly  
 930 935 940

Asp Thr Val Asn Thr Ala Ser Arg Met Glu Ser Thr Gly Leu Pro Leu  
 945 950 955 960

Arg Ile His Val Ser Gly Ser Thr Ile Ala Ile Leu Lys Arg Thr Glu  
 965 970 975

Cys Gln Phe Leu Tyr Glu Val Arg Gly Glu Thr Tyr Leu Lys Gly Arg  
 980 985 990

Gly Asn Glu Thr Thr Tyr Trp Leu Thr Gly Met Lys Asp Gln Lys Phe  
 995 1000 1005

Asn Leu Pro Thr Pro Pro Thr Val Glu Asn Gln Gln Arg Leu Gln  
 1010 1015 1020

Ala Glu Phe Ser Asp Met Ile Ala Asn Ser Leu Gln Lys Arg Gln  
 1025 1030 1035

Ala Ala Gly Ile Arg Ser Gln Lys Pro Arg Arg Val Ala Ser Tyr  
 1040 1045 1050

Lys Lys Gly Thr Leu Glu Tyr Leu Gln Leu Asn Thr Thr Asp Lys  
 1055 1060 1065

Glu Ser Thr Tyr Phe  
 1070

<210> 19  
 <211> 1274  
 <212> DNA  
 <213> Homo sapiens

<400> 19  
 cagcgggaga cggccaacgag attccccat ctctttgaat ataatttttag attgagattc 60  
 agattaaatc cgaggggaaa acactttatg aggctgaaag ctgtgtcggt gccagagaca 120  
 gggttatgag ctatcaaag caattacatt aagacagatt atactgggca aattgagcca 180  
 tttagaaggt gagaatcaaa gaaacggctc tgatcctctt ttcccccttc tctctccctc 240  
 tccctctctc tctaaattgc agttcgtagt tccttccaat tcggaggcac aaaagtaggt 300  
 gagactgctt ttgtatctgc gaagtgcctc actcctgaat gtaattctag ctgagtgcaa 360  
 tctagggttaa gagccggaca agcgggtaat tagagcccg tagctgcccg aggaccggcc 420  
 gccccgcca agcgcgcccc gagtcggcgc ccttctcccg gccgagccta gctgcggctg 480  
 gacacggagc gcccgagatg atggtgctgg acaaggagga cggcgtgccg atgctctccg 540  
 tccagcccaa aggggaagcag aagggtgtg cgggctgtaa ccgcaagatc aaggaccgct 600  
 atctgctgaa ggcattggac aagtactggc acgaagactg cctcaagtgt gcgtgctgtg 660

```

actgccgcct gggcgagggtg ggctccaccc tctacaccaa ggccaacctc atcctgtgcc      720
gacgcgacta cctgaggctc tttggcacca cagggaaactg tgctgcttgc agcaagctga      780
tcccagcctt cgagatgggtg atgcggggccc gggacaacgt gtatcacctc gactgcttcg      840
cctgccagct ctgcaaccag agattttgtg tgggagacaa attcttcctg aagaacaaca      900
tgatcttgtg tcagatggac tatgaggaag ggcagctcaa tggcaccttt gaatcccaag      960
ttcagtaacg cccggcgctt ggctccagg cccgtctgtc catctgcccg cctgccacc      1020
tgcttgcccg gccagccagc cactctacca gtgcaggctg gccagccgct ctctgccac      1080
attagaactt ctccgtcctc gatgggaggg atggcccttc ctctccacc accgcccgtc      1140
tgtgtgtgac ccctcctggg gccaggccgg gcctgtacag tctgtcttct gtatataaat      1200
gggaacatatt attttatgag aaatgtaatg cgattttatt actggcgtgg attaaactta      1260
tgaatgtttc cggg                                         1274

```

```

<210> 20
<211> 156
<212> PRT
<213> Homo sapiens

```

```

<400> 20

```

```

Met Met Val Leu Asp Lys Glu Asp Gly Val Pro Met Leu Ser Val Gln
1           5           10           15

```

```

Pro Lys Gly Lys Gln Lys Gly Cys Ala Gly Cys Asn Arg Lys Ile Lys
          20           25           30

```

```

Asp Arg Tyr Leu Leu Lys Ala Leu Asp Lys Tyr Trp His Glu Asp Cys
          35           40           45

```

```

Leu Lys Cys Ala Cys Cys Asp Cys Arg Leu Gly Glu Val Gly Ser Thr
          50           55           60

```

```

Leu Tyr Thr Lys Ala Asn Leu Ile Leu Cys Arg Arg Asp Tyr Leu Arg
65           70           75           80

```

```

Leu Phe Gly Thr Thr Gly Asn Cys Ala Ala Cys Ser Lys Leu Ile Pro
          85           90           95

```

```

Ala Phe Glu Met Val Met Arg Ala Arg Asp Asn Val Tyr His Leu Asp
          100          105          110

```

Cys Phe Ala Cys Gln Leu Cys Asn Gln Arg Phe Cys Val Gly Asp Lys  
 115 120 125

Phe Phe Leu Lys Asn Asn Met Ile Leu Cys Gln Met Asp Tyr Glu Glu  
 130 135 140

Gly Gln Leu Asn Gly Thr Phe Glu Ser Gln Val Gln  
 145 150 155

<210> 21  
 <211> 2490  
 <212> DNA  
 <213> Homo sapiens

<400> 21  
 ggcacgaggc ttctggccag ggaacgtgga aggcgcaccg acagggatcc ggccagggag 60  
 ggcgagtga agaaggaaat cagaaaggaa gggagttaac aaaataataa aaacagcctg 120  
 agccacggct ggagagaccg agaccggcg caagagagcg cagccttagt aggagaggaa 180  
 cgcgagacgc ggcagagcgc gttcagcact gacttttgct gctgcttctg cttttttttt 240  
 tcttagaaac aagaaggcgc cagcggcagc ctcacacgcg agcgccacgc gaggctcccc 300  
 aagccaaccc gcgaaggag gaggggaggg aggaggaggc ggcgtagcagg gaggagaaaa 360  
 agcattttca ctttttttgc tccactcta agaagtctcc cggggatttt gtatatattt 420  
 ttttaacttc gtcagggtc ccgcttcata tttccttttc tttccctctc tgttcctgca 480  
 cccaagttct ctctgtgtcc ccctcgcggg ccccgcacct cgcgccccg atcgctctga 540  
 ttccgcgact ccttgggcgc cgctgcgcat ggaaagctct gccaaagtgg agagcggcgg 600  
 cgccggccag cagccccagc cgcagcccca gcagcccttc ctgccgccc cagcctgttt 660  
 ctttgccacg gccgcagccg cggcgccgc agccgccgca gcggcagcgc agagcgcgca 720  
 gcagcagcag cagcagcagc agcagcagca gcaggcgccg cagctgagac cggcggccga 780  
 cggccagccc tcagggggcg gtcacaagtc agcgcccaag caagtcaagc gacagcgctc 840  
 gtcttcgccc gaactgatgc gctgcaaacg ccggctcaac ttcagcggct ttggctacag 900  
 cctgccgcag cagcagccgg ccgccgtggc gcgccgaac gagcgcgagc gcaaccgcgt 960  
 caagttggtc aacctgggct ttgccacct tcgggagcac gtccccaacg gcgcggccaa 1020  
 caagaagatg agtaaggtgg agacactgcg ctgcggcggtc gagtacatcc gcgcgctgca 1080  
 gcagctgctg gacgagcatg acgcggtgag cgccgccttc caggcaggcg tcctgtcgcc 1140

```

caccatctcc cccaactact ccaacgactt gaactccatg gccggctcgc cgggtctcatc 1200
ctactcgtcg gacgagggct cttacgaccc gctcagcccc gaggagcagg agcttctcga 1260
cttcaccaac tggttctgag gggtcggcc tggtcaggcc ctggtgcgaa tggactttgg 1320
aagcaggggtg atcgcacaaac ctgcatcttt agtgctttct tgtcagtggc gttgggaggg 1380
ggagaaaagg aaaagaaaaa aaaagaagaa gaagaagaaa agagaagaag aaaaaaacga 1440
aaacagtcaa ccaaccccat cgccaactaa gcgaggcatg cctgagagac atggctttca 1500
gaaaacggga agcgtcaga acagtatctt tgcactccaa tcattcacgg agatatgaag 1560
agcaactggg acctgagtca atgcgcaaaa tgcagcttgt gtgcaaaagc agtgggctcc 1620
tggcagaagg gagcagcaca cgcgttatag taactcccat cacctctaac acgcacagct 1680
gaaagttctt gctcgggtcc cttcacctcc ccgccctttc ttagagtgcg gttcttagcc 1740
ctctagaaac gagttgggtg ctttcgtctc agtagcccc accccaataa gctgtagaca 1800
ttggtttaca gtgaaactat gctattctca gccctttgaa actctgcttc tcctccaggg 1860
cccgattccc aaaccccatg gcttccctca cactgtcttt tctaccattt tcattataga 1920
atgcttccaa tcttttgtga attttttatt ataaaaaatc tatttgtatc tatcctaacc 1980
agttcgggga tatattaaga ttttttgtga cataagagag aaagagagag aaaaatttat 2040
agaagttttg tacaaatggt ttaaaatgtg tatatcttga tactttaaca tgtaatgcta 2100
ttacctctgc atattttaga tgtgtagttc accttacaac tgcaattttc cctatgtggg 2160
tttgtaaaga actctcctca taggtgagat caagaggcca ccagttgtac ttcagcacca 2220
atgtgtctta ctttatagaa atgttgttaa tgtattaatg atgttattaa atactgttca 2280
agaagaacaa agtttatgca gctactgtcc aaactcaaag tggcagccag ttggttttga 2340
taggttgcct tttggagatt tctattactg cctttttttt cttactgttt tattacaaac 2400
ttacaaaaat atgtataacc ctgttttata caaactagtt tcgtaataaa actttttcct 2460
ttttttaaaa tgaaaaaaa aaaaaaaaaa 2490

```

```

<210> 22
<211> 236
<212> PRT
<213> Homo sapiens

```

```

<400> 22

```

```

Met Glu Ser Ser Ala Lys Met Glu Ser Gly Gly Ala Gly Gln Gln Pro
1           5           10           15

```

Gln Pro Gln Pro Gln Gln Pro Phe Leu Pro Pro Ala Ala Cys Phe Phe  
 20 25 30  
 Ala Thr Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Gln  
 35 40 45  
 Ser Ala Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Ala Pro  
 50 55 60  
 Gln Leu Arg Pro Ala Ala Asp Gly Gln Pro Ser Gly Gly Gly His Lys  
 65 70 75 80  
 Ser Ala Pro Lys Gln Val Lys Arg Gln Arg Ser Ser Ser Pro Glu Leu  
 85 90 95  
 Met Arg Cys Lys Arg Arg Leu Asn Phe Ser Gly Phe Gly Tyr Ser Leu  
 100 105 110  
 Pro Gln Gln Gln Pro Ala Ala Val Ala Arg Arg Asn Glu Arg Glu Arg  
 115 120 125  
 Asn Arg Val Lys Leu Val Asn Leu Gly Phe Ala Thr Leu Arg Glu His  
 130 135 140  
 Val Pro Asn Gly Ala Ala Asn Lys Lys Met Ser Lys Val Glu Thr Leu  
 145 150 155 160  
 Arg Ser Ala Val Glu Tyr Ile Arg Ala Leu Gln Gln Leu Leu Asp Glu  
 165 170 175  
 His Asp Ala Val Ser Ala Ala Phe Gln Ala Gly Val Leu Ser Pro Thr  
 180 185 190  
 Ile Ser Pro Asn Tyr Ser Asn Asp Leu Asn Ser Met Ala Gly Ser Pro  
 195 200 205  
 Val Ser Ser Tyr Ser Ser Asp Glu Gly Ser Tyr Asp Pro Leu Ser Pro  
 210 215 220  
 Glu Glu Gln Glu Leu Leu Asp Phe Thr Asn Trp Phe  
 225 230 235

<210> 23  
 <211> 2445  
 <212> DNA  
 <213> Homo sapiens

<400> 23  
 aacataggtg tctgagagac tccagcattt tcggacttct tagtcttgag agtgccaggc 60  
 tatttatctc gaccagccaa gctctggaga gcaatgttga atccctgaga agagagagca 120  
 tggggcgtgc tgatttaaaa acagaaaatg caaagttgga ctgaaaatat ccttagtctt 180  
 ccaagcaatc tgcttaaggg ttccaaactt accttaattt ggtgagaaaa gaagctgccc 240  
 tatttttctt tcttcttctt ctacaactgg aaccagccat ttccgaaaac caccaccatg 300  
 gaggttgcaa tggtagtgct ggagagctca ggggtgcaaca gtcacatgcc ttatggttat 360  
 gctgcccagg cccgggcccg ggagcgggag aggcttgctc actccagggc agctgcagca 420  
 gctgctgttg cagcggccac agctgctgtc gaaggtagcg ggggttctgg tgggggctcc 480  
 caccaccacc accagtcacg cggggcctgt acctcccatg accctcagag cagccggggt 540  
 agtcggagga ggaggcgaca gcggtctgag aagaagaaag cccactaccg gcagagcagc 600  
 ttccctcatt gctctgacct gatgccaggt ggctctgagg agaagatcct gagggagctg 660  
 agtgaggagg aggaagatga ggaggaggag gaagaggagg aagaggaggg aaggttttac 720  
 tatagtgaag atgaccatgg tgatgagtgt tcctacacgg atctgctgcc tcaggatgag 780  
 ggcggtggcg gctacagttc agtccgctac agtgactgtt gtgaacgtgt ggtgataaat 840  
 gtgtcaggcc tacgctttga gacccaaatg aaaactctgg ccagttttcc agagactttg 900  
 ttgggagacc ctgaaaagag gactcagtac tttgaccctt tgcgcaatga gtattttttt 960  
 gacaggaacc gcccagctt tgatgccatc ttgtattatt atcaatcagg aggccgcctg 1020  
 aagaggccag tcaatgtccc ctttgatatc ttactgagg aggtgaagtt ctatcagttg 1080  
 ggggaggagg ccctgttgaa gtttcgggag gacgagggtt ttgtgagaga agaggaagac 1140  
 agggccctcc ccgagaatga atttaaaaag cagattttggc tcctctttga atatccagag 1200  
 agctccagtc ctgcaagggg catagccatt gtgtccgtcc tggatcatctt aatctccatt 1260  
 gtcacttttt gcctggaaac cttgcctgag tttagggacg acagggatct cgtcatggca 1320  
 ctgagtgtctg gcgggcatgg tgggttggtg aatgatactt cagcacccca tctggagaac 1380  
 tcagggcaca caatattcaa tgacccttc ttcatcgtgg aaacagtctg tattgtatgg 1440  
 ttttcctttg agtttgtggt tcgctgcttt gcttgtccca gccaaagcact cttcttcaaa 1500



```

aacatcatga acatcattga cattgtctcc attttgcctt acttcatcac actgggcact 1560
gacctggccc agcaacaggg ggggtggcaat ggtcagcagc agcaggccat gtcctttgcc 1620
atcctcagaa tcattcgtct ggtccgagta ttccggatct tcaaactctc caggcactcc 1680
aaaggcctgc agatcctggg ccacaccctc agagccagca tgcgggaact gggccttctg 1740
atcttcttcc tcttcattgg ggtcatcctc ttttctagtg ctgtgtattt tgcagaggcg 1800
gatgaacctc ctaccattt ccaaagcatc ccagatgcat ttggtgggc tgtggtgacc 1860
atgacaactg tgggctatgg ggacatgaag cccatcactg tagggggcaa gattgtcggg 1920
tccctgtgtg ccattgcggg tgtcttaacc attgctttgc cagtgccagt gattgtctct 1980
aactttaact atttctacca cagagagact gaaaatgagg aacagacaca gctaacgcag 2040
aatgcagtca gttgtccata cctccctct aatttgctca agaaatttcg gagctctact 2100
tcttcttccc tgggggacaa gtcagagtat ctagagatgg aagaaggagt taaggaatct 2160
ctgtgtgcaa aggaggagaa gtgtcaggga aagggggatg acagtgagac agataaaaac 2220
aactgttcta atgcaaaggc tgtggagact gatgtgtgaa tctttttcca cctgccactg 2280
ctccccctc agcatctcca aatatattta tgcatagaga gtgcagttat gaaaatgaaa 2340
tatgcaaatg atccaatgca tacagtagta cactatttaa tggttataca tggcataatt 2400
gttactaaac ttgtattaca tatcaaataa atgatacatc ttgga 2445

```

```

<210> 24
<211> 653
<212> PRT
<213> Homo sapiens

```

```

<400> 24

```

```

Met Glu Val Ala Met Val Ser Ala Glu Ser Ser Gly Cys Asn Ser His
1           5           10           15

```

```

Met Pro Tyr Gly Tyr Ala Ala Gln Ala Arg Ala Arg Glu Arg Glu Arg
20           25           30

```

```

Leu Ala His Ser Arg Ala Ala Ala Ala Ala Val Ala Ala Ala Thr
35           40           45

```

```

Ala Ala Val Glu Gly Ser Gly Gly Ser Gly Gly Gly Ser His His His
50           55           60

```

His Gln Ser Arg Gly Ala Cys Thr Ser His Asp Pro Gln Ser Ser Arg  
 65 70 75 80  
 Gly Ser Arg Arg Arg Arg Arg Gln Arg Ser Glu Lys Lys Lys Ala His  
 85 90 95  
 Tyr Arg Gln Ser Ser Phe Pro His Cys Ser Asp Leu Met Pro Ser Gly  
 100 105 110  
 Ser Glu Glu Lys Ile Leu Arg Glu Leu Ser Glu Glu Glu Glu Asp Glu  
 115 120 125  
 Glu Glu Glu Glu Glu Glu Glu Glu Glu Gly Arg Phe Tyr Tyr Ser Glu  
 130 135 140  
 Asp Asp His Gly Asp Glu Cys Ser Tyr Thr Asp Leu Leu Pro Gln Asp  
 145 150 155 160  
 Glu Gly Gly Gly Gly Tyr Ser Ser Val Arg Tyr Ser Asp Cys Cys Glu  
 165 170 175  
 Arg Val Val Ile Asn Val Ser Gly Leu Arg Phe Glu Thr Gln Met Lys  
 180 185 190  
 Thr Leu Ala Gln Phe Pro Glu Thr Leu Leu Gly Asp Pro Glu Lys Arg  
 195 200 205  
 Thr Gln Tyr Phe Asp Pro Leu Arg Asn Glu Tyr Phe Phe Asp Arg Asn  
 210 215 220  
 Arg Pro Ser Phe Asp Ala Ile Leu Tyr Tyr Tyr Gln Ser Gly Gly Arg  
 225 230 235 240  
 Leu Lys Arg Pro Val Asn Val Pro Phe Asp Ile Phe Thr Glu Glu Val  
 245 250 255  
 Lys Phe Tyr Gln Leu Gly Glu Glu Ala Leu Leu Lys Phe Arg Glu Asp  
 260 265 270  
 Glu Gly Phe Val Arg Glu Glu Glu Asp Arg Ala Leu Pro Glu Asn Glu  
 275 280 285

Phe Lys Lys Gln Ile Trp Leu Leu Phe Glu Tyr Pro Glu Ser Ser Ser  
 290 295 300

Pro Ala Arg Gly Ile Ala Ile Val Ser Val Leu Val Ile Leu Ile Ser  
 305 310 315 320

Ile Val Ile Phe Cys Leu Glu Thr Leu Pro Glu Phe Arg Asp Asp Arg  
 325 330 335

Asp Leu Val Met Ala Leu Ser Ala Gly Gly His Gly Gly Leu Leu Asn  
 340 345 350

Asp Thr Ser Ala Pro His Leu Glu Asn Ser Gly His Thr Ile Phe Asn  
 355 360 365

Asp Pro Phe Phe Ile Val Glu Thr Val Cys Ile Val Trp Phe Ser Phe  
 370 375 380

Glu Phe Val Val Arg Cys Phe Ala Cys Pro Ser Gln Ala Leu Phe Phe  
 385 390 395 400

Lys Asn Ile Met Asn Ile Ile Asp Ile Val Ser Ile Leu Pro Tyr Phe  
 405 410 415

Ile Thr Leu Gly Thr Asp Leu Ala Gln Gln Gln Gly Gly Gly Asn Gly  
 420 425 430

Gln Gln Gln Gln Ala Met Ser Phe Ala Ile Leu Arg Ile Ile Arg Leu  
 435 440 445

Val Arg Val Phe Arg Ile Phe Lys Leu Ser Arg His Ser Lys Gly Leu  
 450 455 460

Gln Ile Leu Gly His Thr Leu Arg Ala Ser Met Arg Glu Leu Gly Leu  
 465 470 475 480

Leu Ile Phe Phe Leu Phe Ile Gly Val Ile Leu Phe Ser Ser Ala Val  
 485 490 495

Tyr Phe Ala Glu Ala Asp Glu Pro Thr Thr His Phe Gln Ser Ile Pro  
 500 505 510

Asp Ala Phe Trp Trp Ala Val Val Thr Met Thr Thr Val Gly Tyr Gly  
515 520 525

Asp Met Lys Pro Ile Thr Val Gly Gly Lys Ile Val Gly Ser Leu Cys  
530 535 540

Ala Ile Ala Gly Val Leu Thr Ile Ala Leu Pro Val Pro Val Ile Val  
545 550 555 560

Ser Asn Phe Asn Tyr Phe Tyr His Arg Glu Thr Glu Asn Glu Glu Gln  
565 570 575

Thr Gln Leu Thr Gln Asn Ala Val Ser Cys Pro Tyr Leu Pro Ser Asn  
580 585 590

Leu Leu Lys Lys Phe Arg Ser Ser Thr Ser Ser Ser Leu Gly Asp Lys  
595 600 605

Ser Glu Tyr Leu Glu Met Glu Glu Gly Val Lys Glu Ser Leu Cys Ala  
610 615 620

Lys Glu Glu Lys Cys Gln Gly Lys Gly Asp Asp Ser Glu Thr Asp Lys  
625 630 635 640

Asn Asn Cys Ser Asn Ala Lys Ala Val Glu Thr Asp Val  
645 650

<210> 25

<211> 3336

<212> DNA

<213> Homo sapiens

<400> 25

ttttcttaga cattaactgc agacggctgg caggatagaa gcagcggctc acttggactt 60

tttcaccagg gaaatcagag acaatgatgg ggctcttccc cagaactaca ggggctctgg 120

ccatcttcgt ggtggtcata ttggttcatt gagaattgag aatagagact aaaggtcaat 180

atgatgaaga agagatgact atgcaacaag ctaaaagaag gcaaaaacgt gaatgggtga 240

aatttgccaa accctgcaga gaaggagaag ataactcaaa aagaaacca attgccaaga 300

ttacttcaga ttaccaagca acccagaaaa tcacctaccg aatctctgga gtgggaatcg 360

atcagccgcc ttttggaatc tttgttggtg acaaaaacac tggagatatt aacataacag 420

ctatagtcga ccgggaggaa actccaagct tcctgatcac atgtcgggct ctaaattgccc	480
aaggactaga tgtagagaaa ccacttatac taacgggttaa aatttttgat attaattgata	540
atcctccagt attttcacaa caaattttca tgggtgaaat tgaagaaaat agtgcctcaa	600
actcaactggt gatgatacta aatgccacag atgcagatga accaaaccac ttgaattcta	660
aaattgcctt caaaattgtc tctcaggaac cagcaggcac acccatgttc ctcctaagca	720
gaaacactgg ggaagtccgt actttgacca attctcttga ccgagagcaa gctagcagct	780
atcgtctggt tgtgagtggg gcagacaaag atggagaagg actatcaact caatgtgaat	840
gtaatatata agtgaaagat gtcaacgata acttcccaat gtttagagac tctcagtatt	900
cagcacgtat tgaagaaaat attttaagtt ctgaattact tcgatttcaa gtaacagatt	960
tggatgaaga gtacacagat aattggcttg cagtatatatt ctttacctct gggaatgaag	1020
gaaattgggt tgaaatacaa actgatccta gaactaatga aggcattcctg aaagtgggtga	1080
aggctctaga ttatgaacaa ctacaaagcg tgaaacttag tattgctgtc aaaaacaaag	1140
ctgaatttca ccaatcagtt atctctcgat accgagttca gtcaacccca gtcacaattc	1200
aggtaataaa tgtaagagaa ggaattgcat tccgtcctgc ttccaagaca tttactgtgc	1260
aaaaaggcat aagtagcaaa aaattgggtg attatatacct gggaacatat caagccatcg	1320
atgaggacac taacaaagct gcctcaaag tcaaatatgt catgggacgt aacgatgggtg	1380
gatacctaatt gattgattca aaaactgctg aaatcaaatt tgtcaaaaat atgaaccgag	1440
attctacttt catagttaac aaaacaatca cagctgaggt tctggccata gatgaatata	1500
cgggtaaaac ttctacaggc acggtatatg ttagagtacc cgatttcaat gacaattgtc	1560
caacagctgt cctcgaaaaa gatgcagttt gcagttcttc accttccgtg gttgtctccg	1620
ctagaacact gaataataga tacactggcc cctatacatt tgcactggaa gatcaacctg	1680
taaagttgcc tgccgtatgg agtatcaciaa ccctcaatgc tacctcgcc ctcctcagag	1740
cccaggaaca gatacctcct ggagtatacc acatctccct ggtacttaca gacagtcaga	1800
acaatcgggtg tgagatgcc a cgcagcttga cactggaagt ctgtcagtg gacaacaggg	1860
gcatctgtgg aacttcttac ccaaccacaa gccctgggac caggatggc aggccgcact	1920
cagggaggct ggggcctgcc gccatcgcc tgctgtcct tggctctctg ctgctgctgt	1980
tggccccct tctgctgttg acctgtgact gtggggcagg ttctactggg ggagtgcag	2040
gtgggttttat cccagttcct gatggctcag aaggaacaat tcatcagtgg ggaattgaag	2100

```

gagcccatcc tgaagacaag gaaatcacia atatttgtgt gcctcctgta acagccaatg 2160
gagccgattt catggaaagt tctgaagttt gtacaaatac gtatgccaga ggcacagcgg 2220
tggaaggcac ttcaggaatg gaaatgacca ctaagcttgg agcagccact gaatctggag 2280
gtgctgcagg ctttgcaaca gggacagtgt caggagctgc ttcaggattc ggagcagcca 2340
ctggagttgg catctgttcc tcagggcagt ctggaaccat gagaacaagg cattccactg 2400
gaggaaccaa taaggactac gctgatgggg cgataagcat gaattttctg gactcctact 2460
tttctcagaa agcatttgcc tgtgcggagg aagacgatgg ccaggaagca aatgactgct 2520
tgttgatcta tgataatgaa ggcgagatg ccactgggtc tcctgtgggc tccgtgggtt 2580
gttgcatgtt tattgctgat gacctggatg acagcttctt ggactcactt ggacccaaat 2640
ttaaaaaact tgcagagata agccttggtg ttgatggtga aggcaaagaa gttcagccac 2700
cctctaaaga cagcgggttat gggattgaat cctgtggcca tcccatagaa gtccagcaga 2760
caggatttgt taagtgccag actttgtcag gaagtcaagg agcttctgct ttgtccgcct 2820
ctgggtctgt ccagccagct gtttccatcc ctgaccctct gcagcatggt aactatttag 2880
taacggagac ttactcggct tctggttccc tcgtgcaacc ttccactgca ggctttgatc 2940
cacttctcac acaaaatgtg atagtacag aaagggatgat ctgtccatt tccagtgttc 3000
ctggcaacct agctggcca acgcagctac gagggtcaca tactatgctc tgtacagagg 3060
atccttgctc ccgtctaata tgaccagaat gagctggaat accacactga ccaaactctg 3120
atctttggac taaagtattc aaaatagcat agcaaagctc actgtattgg gctaataatt 3180
tggcacttat tagcttctct cataaactga tcacgattat aaattaaatg tttgggttca 3240
taccccaaaa gcaatatgtt gtcactccta attctcaagt actattcaaa ttgtagtaaa 3300
tcttaaagtt tttcaaaacc ctaaaatcat attcgc 3336

```

<210> 26  
 <211> 999  
 <212> PRT  
 <213> Homo sapiens

<400> 26

```

Met Met Gly Leu Phe Pro Arg Thr Thr Gly Ala Leu Ala Ile Phe Val
1           5           10           15

```

```

Val Val Ile Leu Val His Gly Glu Leu Arg Ile Glu Thr Lys Gly Gln
          20           25           30

```

Tyr Asp Glu Glu Glu Met Thr Met Gln Gln Ala Lys Arg Arg Gln Lys  
 35 40 45

Arg Glu Trp Val Lys Phe Ala Lys Pro Cys Arg Glu Gly Glu Asp Asn  
 50 55 60

Ser Lys Arg Asn Pro Ile Ala Lys Ile Thr Ser Asp Tyr Gln Ala Thr  
 65 70 75 80

Gln Lys Ile Thr Tyr Arg Ile Ser Gly Val Gly Ile Asp Gln Pro Pro  
 85 90 95

Phe Gly Ile Phe Val Val Asp Lys Asn Thr Gly Asp Ile Asn Ile Thr  
 100 105 110

Ala Ile Val Asp Arg Glu Glu Thr Pro Ser Phe Leu Ile Thr Cys Arg  
 115 120 125

Ala Leu Asn Ala Gln Gly Leu Asp Val Glu Lys Pro Leu Ile Leu Thr  
 130 135 140

Val Lys Ile Leu Asp Ile Asn Asp Asn Pro Pro Val Phe Ser Gln Gln  
 145 150 155 160

Ile Phe Met Gly Glu Ile Glu Glu Asn Ser Ala Ser Asn Ser Leu Val  
 165 170 175

Met Ile Leu Asn Ala Thr Asp Ala Asp Glu Pro Asn His Leu Asn Ser  
 180 185 190

Lys Ile Ala Phe Lys Ile Val Ser Gln Glu Pro Ala Gly Thr Pro Met  
 195 200 205

Phe Leu Leu Ser Arg Asn Thr Gly Glu Val Arg Thr Leu Thr Asn Ser  
 210 215 220

Leu Asp Arg Glu Gln Ala Ser Ser Tyr Arg Leu Val Val Ser Gly Ala  
 225 230 235 240

Asp Lys Asp Gly Glu Gly Leu Ser Thr Gln Cys Glu Cys Asn Ile Lys  
 245 250 255

Val Lys Asp Val Asn Asp Asn Phe Pro Met Phe Arg Asp Ser Gln Tyr  
 260 265 270  
 Ser Ala Arg Ile Glu Glu Asn Ile Leu Ser Ser Glu Leu Leu Arg Phe  
 275 280 285  
 Gln Val Thr Asp Leu Asp Glu Glu Tyr Thr Asp Asn Trp Leu Ala Val  
 290 295 300  
 Tyr Phe Phe Thr Ser Gly Asn Glu Gly Asn Trp Phe Glu Ile Gln Thr  
 305 310 315 320  
 Asp Pro Arg Thr Asn Glu Gly Ile Leu Lys Val Val Lys Ala Leu Asp  
 325 330 335  
 Tyr Glu Gln Leu Gln Ser Val Lys Leu Ser Ile Ala Val Lys Asn Lys  
 340 345 350  
 Ala Glu Phe His Gln Ser Val Ile Ser Arg Tyr Arg Val Gln Ser Thr  
 355 360 365  
 Pro Val Thr Ile Gln Val Ile Asn Val Arg Glu Gly Ile Ala Phe Arg  
 370 375 380  
 Pro Ala Ser Lys Thr Phe Thr Val Gln Lys Gly Ile Ser Ser Lys Lys  
 385 390 395 400  
 Leu Val Asp Tyr Ile Leu Gly Thr Tyr Gln Ala Ile Asp Glu Asp Thr  
 405 410 415  
 Asn Lys Ala Ala Ser Asn Val Lys Tyr Val Met Gly Arg Asn Asp Gly  
 420 425 430  
 Gly Tyr Leu Met Ile Asp Ser Lys Thr Ala Glu Ile Lys Phe Val Lys  
 435 440 445  
 Asn Met Asn Arg Asp Ser Thr Phe Ile Val Asn Lys Thr Ile Thr Ala  
 450 455 460  
 Glu Val Leu Ala Ile Asp Glu Tyr Thr Gly Lys Thr Ser Thr Gly Thr  
 465 470 475 480



Val Tyr Val Arg Val Pro Asp Phe Asn Asp Asn Cys Pro Thr Ala Val  
485 490 495

Leu Glu Lys Asp Ala Val Cys Ser Ser Ser Pro Ser Val Val Val Ser  
500 505 510

Ala Arg Thr Leu Asn Asn Arg Tyr Thr Gly Pro Tyr Thr Phe Ala Leu  
515 520 525

Glu Asp Gln Pro Val Lys Leu Pro Ala Val Trp Ser Ile Thr Thr Leu  
530 535 540

Asn Ala Thr Ser Ala Leu Leu Arg Ala Gln Glu Gln Ile Pro Pro Gly  
545 550 555 560

Val Tyr His Ile Ser Leu Val Leu Thr Asp Ser Gln Asn Asn Arg Cys  
565 570 575

Glu Met Pro Arg Ser Leu Thr Leu Glu Val Cys Gln Cys Asp Asn Arg  
580 585 590

Gly Ile Cys Gly Thr Ser Tyr Pro Thr Thr Ser Pro Gly Thr Arg Tyr  
595 600 605

Gly Arg Pro His Ser Gly Arg Leu Gly Pro Ala Ala Ile Gly Leu Leu  
610 615 620

Leu Leu Gly Leu Leu Leu Leu Leu Leu Ala Pro Leu Leu Leu Leu Thr  
625 630 635 640

Cys Asp Cys Gly Ala Gly Ser Thr Gly Gly Val Thr Gly Gly Phe Ile  
645 650 655

Pro Val Pro Asp Gly Ser Glu Gly Thr Ile His Gln Trp Gly Ile Glu  
660 665 670

Gly Ala His Pro Glu Asp Lys Glu Ile Thr Asn Ile Cys Val Pro Pro  
675 680 685

Val Thr Ala Asn Gly Ala Asp Phe Met Glu Ser Ser Glu Val Cys Thr  
690 695 700

Asn Thr Tyr Ala Arg Gly Thr Ala Val Glu Gly Thr Ser Gly Met Glu  
 705 710 715 720  
 Met Thr Thr Lys Leu Gly Ala Ala Thr Glu Ser Gly Gly Ala Ala Gly  
 725 730 735  
 Phe Ala Thr Gly Thr Val Ser Gly Ala Ala Ser Gly Phe Gly Ala Ala  
 740 745 750  
 Thr Gly Val Gly Ile Cys Ser Ser Gly Gln Ser Gly Thr Met Arg Thr  
 755 760 765  
 Arg His Ser Thr Gly Gly Thr Asn Lys Asp Tyr Ala Asp Gly Ala Ile  
 770 775 780  
 Ser Met Asn Phe Leu Asp Ser Tyr Phe Ser Gln Lys Ala Phe Ala Cys  
 785 790 795 800  
 Ala Glu Glu Asp Asp Gly Gln Glu Ala Asn Asp Cys Leu Leu Ile Tyr  
 805 810 815  
 Asp Asn Glu Gly Ala Asp Ala Thr Gly Ser Pro Val Gly Ser Val Gly  
 820 825 830  
 Cys Cys Ser Phe Ile Ala Asp Asp Leu Asp Asp Ser Phe Leu Asp Ser  
 835 840 845  
 Leu Gly Pro Lys Phe Lys Lys Leu Ala Glu Ile Ser Leu Gly Val Asp  
 850 855 860  
 Gly Glu Gly Lys Glu Val Gln Pro Pro Ser Lys Asp Ser Gly Tyr Gly  
 865 870 875 880  
 Ile Glu Ser Cys Gly His Pro Ile Glu Val Gln Gln Thr Gly Phe Val  
 885 890 895  
 Lys Cys Gln Thr Leu Ser Gly Ser Gln Gly Ala Ser Ala Leu Ser Ala  
 900 905 910  
 Ser Gly Ser Val Gln Pro Ala Val Ser Ile Pro Asp Pro Leu Gln His  
 915 920 925

Gly Asn Tyr Leu Val Thr Glu Thr Tyr Ser Ala Ser Gly Ser Leu Val  
 930 935 940

Gln Pro Ser Thr Ala Gly Phe Asp Pro Leu Leu Thr Gln Asn Val Ile  
 945 950 955 960

Val Thr Glu Arg Val Ile Cys Pro Ile Ser Ser Val Pro Gly Asn Leu  
 965 970 975

Ala Gly Pro Thr Gln Leu Arg Gly Ser His Thr Met Leu Cys Thr Glu  
 980 985 990

Asp Pro Cys Ser Arg Leu Ile  
 995

<210> 27  
 <211> 1667  
 <212> DNA  
 <213> Homo sapiens

<400> 27  
 aagcacaggc caccactctg ccctggtcca cacaagctcc ggtagcccat ggagccctgg 60  
 cctctcctcc tgctcttttag cctttgctca gctggcctcg tcctgggctc cgaacatgag 120  
 acccgtcttg tggcaaagct atttaaagac tacagcagcg tggcgcgcc agtggaaagac 180  
 caccgccagg tcgtggaggt caccgtgggc ctgcagctga tacagctcat caatgtggat 240  
 gaagtaaatac agatcgtgac aaccaatgtg cgtctgaaac agcaatgggt ggattacaac 300  
 ctaaaatgga atccagatga ctatggcggg gtgaaaaaaa ttcacattcc ttcagaaaag 360  
 atctggcgcc cagaccttgt tctctataac aatgcagatg gtgactttgc tattgtcaag 420  
 ttcaccaaag tgctcctgca gtacactggc cacatcacgt ggacacctcc agccatcttt 480  
 aaaagctact gtgagatcat cgtcaccac tttccctttg atgaacagaa ctgcagcatg 540  
 aagctgggca cctggaccta cgacggctct gtcgtggcca tcaaccgga aagcgaccag 600  
 ccagacctga gcaacttcat ggagagcggg gagggggtga tcaaggagtc ccggggctgg 660  
 aagcactccg tgacctattc ctgctgcccc gacaccccct acctggacat cacctaccac 720  
 ttcgtcatgc agcgctgcc cctctacttc atcgtcaacg tcatcatccc ctgcctgctc 780  
 ttctccttct taactggcct ggtattctac ctgccacag actcagggga gaagatgact 840  
 ctgagcatct ctgtcttact gtctttgact gtgttccttc tggatcatcg ggagctgac 900

```

ccctccacgt ccagtgtgtt gcccttgatt ggaaaataca tgctgttcac catggtgttc 960
gtcattgcct ccatcatcat cactgtcatc gtcataaca cacaccaccg ctcaccacgc 1020
acccatgtca tgcccaactg ggtgcggaag gtttttatcg aactatccc aaatatcatg 1080
tttttctcca caatgaaaag accatccaga gaaaagcaag aaaaaaatg ttttacagaa 1140
gacattgata tctctgacat ttctggaaag ccagggcctc caccatggg cttocactct 1200
cccctgatca aacaccccg ggtgaaaagt gccatcgagg gcatcaagta catgcagag 1260
accatgaagt cagaccagga gtctaacaat gcggcggcag agtggaagta cgttgcaatg 1320
gtgatggacc acatactcct cggagtcttc atgcttggtt gcatcatcgg aaccctagcc 1380
gtgtttgcag gtcgactcat tgaattaaat cagcaaggat gagcagaaaa tgagctgagc 1440
ttagctctgc cctggaacct accagagcag agaagggcag gagaggaaga tttgtctact 1500
tgctccactc gcacttatca aacgtgttat attccatact tattattgat gataagattt 1560
acctttatgt aagtttatgg ccttgaagtg ttttcatatt gcttctccct ttagttctgc 1620
tgtctccctg aagagtgaac cctctttagt aaatgaaact aatcact 1667

```

```

<210> 28
<211> 457
<212> PRT
<213> Homo sapiens

```

```

<400> 28

```

```

Met Glu Pro Trp Pro Leu Leu Leu Leu Phe Ser Leu Cys Ser Ala Gly
1           5           10          15

```

```

Leu Val Leu Gly Ser Glu His Glu Thr Arg Leu Val Ala Lys Leu Phe
20           25          30

```

```

Lys Asp Tyr Ser Ser Val Val Arg Pro Val Glu Asp His Arg Gln Val
35           40          45

```

```

Val Glu Val Thr Val Gly Leu Gln Leu Ile Gln Leu Ile Asn Val Asp
50           55          60

```

```

Glu Val Asn Gln Ile Val Thr Thr Asn Val Arg Leu Lys Gln Gln Trp
65           70          75          80

```

```

Val Asp Tyr Asn Leu Lys Trp Asn Pro Asp Asp Tyr Gly Gly Val Lys
85           90          95

```

Lys Ile His Ile Pro Ser Glu Lys Ile Trp Arg Pro Asp Leu Val Leu  
 100 105 110  
 Tyr Asn Asn Ala Asp Gly Asp Phe Ala Ile Val Lys Phe Thr Lys Val  
 115 120 125  
 Leu Leu Gln Tyr Thr Gly His Ile Thr Trp Thr Pro Pro Ala Ile Phe  
 130 135 140  
 Lys Ser Tyr Cys Glu Ile Ile Val Thr His Phe Pro Phe Asp Glu Gln  
 145 150 155 160  
 Asn Cys Ser Met Lys Leu Gly Thr Trp Thr Tyr Asp Gly Ser Val Val  
 165 170 175  
 Ala Ile Asn Pro Glu Ser Asp Gln Pro Asp Leu Ser Asn Phe Met Glu  
 180 185 190  
 Ser Gly Glu Trp Val Ile Lys Glu Ser Arg Gly Trp Lys His Ser Val  
 195 200 205  
 Thr Tyr Ser Cys Cys Pro Asp Thr Pro Tyr Leu Asp Ile Thr Tyr His  
 210 215 220  
 Phe Val Met Gln Arg Leu Pro Leu Tyr Phe Ile Val Asn Val Ile Ile  
 225 230 235 240  
 Pro Cys Leu Leu Phe Ser Phe Leu Thr Gly Leu Val Phe Tyr Leu Pro  
 245 250 255  
 Thr Asp Ser Gly Glu Lys Met Thr Leu Ser Ile Ser Val Leu Leu Ser  
 260 265 270  
 Leu Thr Val Phe Leu Leu Val Ile Val Glu Leu Ile Pro Ser Thr Ser  
 275 280 285  
 Ser Ala Val Pro Leu Ile Gly Lys Tyr Met Leu Phe Thr Met Val Phe  
 290 295 300  
 Val Ile Ala Ser Ile Ile Ile Thr Val Ile Val Ile Asn Thr His His  
 305 310 315 320



ccattggcac catgagccca tctctgggat tcccagccca gatgaatcac caaaaagggc 480  
cctcgccttc ctttgggggtc cagccttggtg gtcccatga ctctgcccg ggtgggatga 540  
tcccacatcc tcagtcccg ggacccttcc caacttgcca gctgaagtct gagctggaca 600  
tgctggttgg caagtgccg gaggaaccct tggaaggtga tatgtccagc cccaactcca 660  
caggcataca ggatcccctg ttggggatgc tggatgggcg ggaggacctc gagagagagg 720  
agaagcgtga gcctgaatct gtgtatgaaa ctgactgccg ttgggatggc tgcagccagg 780  
aatttgactc ccaagagcag ctggtgcacc acatcaacag cgagcacatc cacggggagc 840  
ggaaggagtt cgtgtgccac tgggggggct gctccaggga gctgaggccc ttcaaagccc 900  
agtacatgct ggtggttcac atgcgcagac aactggcga gaagccacac aagtgcacgt 960  
ttgaaggggtg ccggaagtca tactcacgcc tcgaaaacct gaagacgcac ctgcggctac 1020  
acacgggtga gaagccatac atgtgtgagc acgagggtg cagtaaagcc ttcagcaatg 1080  
ccagtgaccg agccaagcac cagaatcgga cccattccaa tgagaagccg tatgtatgta 1140  
agctccctgg ctgcaccaa cgctatacag atcctagctc gctgcgaaaa catgtcaaga 1200  
cagtgcattg tcctgacgcc catgtgacca aacggcaccg tggggatggc cccctgcctc 1260  
gggcaccatc catttctaca gtggagccca agaggagcg ggaaggaggt cccatcaggg 1320  
aggaaagcag actgactgtg ccagagggtg ccatgaagcc acagccaagc cctggggccc 1380  
agtcacctcg cagcagtgc cactccccgg cagggagtgc agccaataca gacagtgggtg 1440  
tggaatgac tggcaatgca gggggcagca ctgaagacct ctccagcttg gacgagggac 1500  
cttgcatcgc tggcactggt ctgtccactc ttgcgcctc tgagaacctc aggctggacc 1560  
agctacatca actccggcca atagggaccc ggggtctcaa actgccagc ttgtcccaca 1620  
ccggtaccac tgtgtcccg cgcgtgggc cccagctctc tcttgaacgc cgcagcagca 1680  
gctccagcag catcagctct gcctatactg tcagccgccc ctctccctg gcctctcctt 1740  
tccccctgg ctccccacca gagaatggag catcctccct gcctggcctt atgcctgccc 1800  
agcactacct gcttcgggca agatatgctt cagccagagg ggttggtact tcgcccactg 1860  
cagcatccag cctggatcgg atagggtggtc ttcccatgcc tccttggaga agccgagccg 1920  
agtatccagg atacaacccc aatgcagggg tcacccggag ggccagtgc ccagcccagg 1980  
ctgctgaccg tcctgctcca gctagagtcc agaggttcaa gagcctgggc tgtgtccata 2040  
cccacccac tgtggcaggg ggaggacaga actttgatcc ttacctcca acctctgtct 2100

```

actcaccaca gccccccagc atcactgaga atgctgccat ggatgctaga gggctacagg 2160
aagagccaga agttgggacc tccatggtgg gcagtgggtct gaacccttat atggacttcc 2220
cacctactga tactctggga tatgggggac ctgaaggggc agcagctgag ccttatggag 2280
cgaggggtcc aggctctctg cctcttgggc ctggtccacc caccaactat ggccccaacc 2340
cctgtcccca gcaggcctca tatcctgacc ccaccaaga aacatggggt gagttccctt 2400
cccactctgg gctgtacca ggccccaagg ctctaggtgg aacctacagc cagtgtcctc 2460
gacttgaaca ttatggacaa gtgcaagtca agccagaaca ggggtgcca gtgggggtctg 2520
actccacagg actggcaccc tgccatcaatg cccaccccag tgagggggcc ccacatccac 2580
agcctctctt ttcccattac cccagccct ctctcccca atatctccag tcaggccctt 2640
ataccagcc accccctgat tatcttctt cagaaccag gccttgccctg gactttgatt 2700
ccccaccca ttccacaggg cagctcaagg ctgagcttgt gtgtaattat gttcaatctc 2760
aacaggagct actgtgggag ggtgggggca ggaagatgc ccccgcccag gaaccttctt 2820
accagagtcc caagtttctg gggggttccc aggttagccc aagccgtgct aaagctccag 2880
tgaacacata tggacctggc ttgggacca acttgccaa tcacaagtca ggttcctatc 2940
ccacccttc accatgccat gaaaattttg tagtgggggc aaatagggtt tcacataggg 3000
cagcagcacc acctcgactt ctgccccat tgccacttg ctatgggcct ctcaaagtgg 3060
gaggcacaaa cccagctgt ggtcatcctg aggtgggcag gctaggaggg ggtcctgcct 3120
tgtaccctcc tcccgaagga caggtatgta accccctgga ctctcttgat cttgacaaca 3180
ctcagctgga ctttgtggct attctggatg agccccaggg gctgagtcct cctccttccc 3240
atgatcagcg gggcagctct ggacataccc cacctccctc tgggcccccc aacatggctg 3300
tgggcaacat gagtgtctta ctgagatccc tacctgggga aacagaattc ctcaactcta 3360
gtgcctaaag agtagggaat ctcatccatc acagatcgca tttcctaagg ggtttctatc 3420
cttccagaaa aattggggga gctgcagtcc cctgcacaag atgccccagg gatgggaggt 3480
atgggctggg ggctatgtat agtctgtata cgttttgagg agaaatttga taatgacact 3540
gtttcctgat aataaaggaa ctgcatcaga aaaaaaaaaa aaaaaaa 3587

```

```

<210> 30
<211> 1106
<212> PRT
<213> Homo sapiens

```



&lt;400&gt; 30

Met Phe Asn Ser Met Thr Pro Pro Pro Ile Ser Ser Tyr Gly Glu Pro  
 1 5 10 15

Cys Cys Leu Arg Pro Leu Pro Ser Gln Gly Ala Pro Ser Val Gly Thr  
 20 25 30

Glu Gly Leu Ser Gly Pro Pro Phe Cys His Gln Ala Asn Leu Met Ser  
 35 40 45

Gly Pro His Ser Tyr Gly Pro Ala Arg Glu Thr Asn Ser Cys Thr Glu  
 50 55 60

Gly Pro Leu Phe Ser Ser Pro Arg Ser Ala Val Lys Leu Thr Lys Lys  
 65 70 75 80

Arg Ala Leu Ser Ile Ser Pro Leu Ser Asp Ala Ser Leu Asp Leu Gln  
 85 90 95

Thr Val Ile Arg Thr Ser Pro Ser Ser Leu Val Ala Phe Ile Asn Ser  
 100 105 110

Arg Cys Thr Ser Pro Gly Gly Ser Tyr Gly His Leu Ser Ile Gly Thr  
 115 120 125

Met Ser Pro Ser Leu Gly Phe Pro Ala Gln Met Asn His Gln Lys Gly  
 130 135 140

Pro Ser Pro Ser Phe Gly Val Gln Pro Cys Gly Pro His Asp Ser Ala  
 145 150 155 160

Arg Gly Gly Met Ile Pro His Pro Gln Ser Arg Gly Pro Phe Pro Thr  
 165 170 175

Cys Gln Leu Lys Ser Glu Leu Asp Met Leu Val Gly Lys Cys Arg Glu  
 180 185 190

Glu Pro Leu Glu Gly Asp Met Ser Ser Pro Asn Ser Thr Gly Ile Gln  
 195 200 205

Asp Pro Leu Leu Gly Met Leu Asp Gly Arg Glu Asp Leu Glu Arg Glu  
 210 215 220

Glu Lys Arg Glu Pro Glu Ser Val Tyr Glu Thr Asp Cys Arg Trp Asp  
 225 230 235 240

Gly Cys Ser Gln Glu Phe Asp Ser Gln Glu Gln Leu Val His His Ile  
 245 250 255

Asn Ser Glu His Ile His Gly Glu Arg Lys Glu Phe Val Cys His Trp  
 260 265 270

Gly Gly Cys Ser Arg Glu Leu Arg Pro Phe Lys Ala Gln Tyr Met Leu  
 275 280 285

Val Val His Met Arg Arg His Thr Gly Glu Lys Pro His Lys Cys Thr  
 290 295 300

Phe Glu Gly Cys Arg Lys Ser Tyr Ser Arg Leu Glu Asn Leu Lys Thr  
 305 310 315 320

His Leu Arg Ser His Thr Gly Glu Lys Pro Tyr Met Cys Glu His Glu  
 325 330 335

Gly Cys Ser Lys Ala Phe Ser Asn Ala Ser Asp Arg Ala Lys His Gln  
 340 345 350

Asn Arg Thr His Ser Asn Glu Lys Pro Tyr Val Cys Lys Leu Pro Gly  
 355 360 365

Cys Thr Lys Arg Tyr Thr Asp Pro Ser Ser Leu Arg Lys His Val Lys  
 370 375 380

Thr Val His Gly Pro Asp Ala His Val Thr Lys Arg His Arg Gly Asp  
 385 390 395 400

Gly Pro Leu Pro Arg Ala Pro Ser Ile Ser Thr Val Glu Pro Lys Arg  
 405 410 415

Glu Arg Glu Gly Gly Pro Ile Arg Glu Glu Ser Arg Leu Thr Val Pro  
 420 425 430

Glu Gly Ala Met Lys Pro Gln Pro Ser Pro Gly Ala Gln Ser Ser Cys  
 435 440 445

Ser Ser Asp His Ser Pro Ala Gly Ser Ala Ala Asn Thr Asp Ser Gly  
 450 455 460

Val Glu Met Thr Gly Asn Ala Gly Gly Ser Thr Glu Asp Leu Ser Ser  
 465 470 475 480

Leu Asp Glu Gly Pro Cys Ile Ala Gly Thr Gly Leu Ser Thr Leu Arg  
 485 490 495

Arg Leu Glu Asn Leu Arg Leu Asp Gln Leu His Gln Leu Arg Pro Ile  
 500 505 510

Gly Thr Arg Gly Leu Lys Leu Pro Ser Leu Ser His Thr Gly Thr Thr  
 515 520 525

Val Ser Arg Arg Val Gly Pro Pro Val Ser Leu Glu Arg Arg Ser Ser  
 530 535 540

Ser Ser Ser Ser Ile Ser Ser Ala Tyr Thr Val Ser Arg Arg Ser Ser  
 545 550 555 560

Leu Ala Ser Pro Phe Pro Pro Gly Ser Pro Pro Glu Asn Gly Ala Ser  
 565 570 575

Ser Leu Pro Gly Leu Met Pro Ala Gln His Tyr Leu Leu Arg Ala Arg  
 580 585 590

Tyr Ala Ser Ala Arg Gly Gly Gly Thr Ser Pro Thr Ala Ala Ser Ser  
 595 600 605

Leu Asp Arg Ile Gly Gly Leu Pro Met Pro Pro Trp Arg Ser Arg Ala  
 610 615 620

Glu Tyr Pro Gly Tyr Asn Pro Asn Ala Gly Val Thr Arg Arg Ala Ser  
 625 630 635 640

Asp Pro Ala Gln Ala Ala Asp Arg Pro Ala Pro Ala Arg Val Gln Arg  
 645 650 655

Phe Lys Ser Leu Gly Cys Val His Thr Pro Pro Thr Val Ala Gly Gly  
 660 665 670

Gly Gln Asn Phe Asp Pro Tyr Leu Pro Thr Ser Val Tyr Ser Pro Gln  
 675 680 685

Pro Pro Ser Ile Thr Glu Asn Ala Ala Met Asp Ala Arg Gly Leu Gln  
 690 695 700

Glu Glu Pro Glu Val Gly Thr Ser Met Val Gly Ser Gly Leu Asn Pro  
 705 710 715 720

Tyr Met Asp Phe Pro Pro Thr Asp Thr Leu Gly Tyr Gly Gly Pro Glu  
 725 730 735

Gly Ala Ala Ala Glu Pro Tyr Gly Ala Arg Gly Pro Gly Ser Leu Pro  
 740 745 750

Leu Gly Pro Gly Pro Pro Thr Asn Tyr Gly Pro Asn Pro Cys Pro Gln  
 755 760 765

Gln Ala Ser Tyr Pro Asp Pro Thr Gln Glu Thr Trp Gly Glu Phe Pro  
 770 775 780

Ser His Ser Gly Leu Tyr Pro Gly Pro Lys Ala Leu Gly Gly Thr Tyr  
 785 790 795 800

Ser Gln Cys Pro Arg Leu Glu His Tyr Gly Gln Val Gln Val Lys Pro  
 805 810 815

Glu Gln Gly Cys Pro Val Gly Ser Asp Ser Thr Gly Leu Ala Pro Cys  
 820 825 830

Leu Asn Ala His Pro Ser Glu Gly Pro Pro His Pro Gln Pro Leu Phe  
 835 840 845

Ser His Tyr Pro Gln Pro Ser Pro Pro Gln Tyr Leu Gln Ser Gly Pro  
 850 855 860

Tyr Thr Gln Pro Pro Pro Asp Tyr Leu Pro Ser Glu Pro Arg Pro Cys  
 865 870 875 880

Leu Asp Phe Asp Ser Pro Thr His Ser Thr Gly Gln Leu Lys Ala Gln  
 885 890 895

Leu Val Cys Asn Tyr Val Gln Ser Gln Gln Glu Leu Leu Trp Glu Gly  
 900 905 910

Gly Gly Arg Glu Asp Ala Pro Ala Gln Glu Pro Ser Tyr Gln Ser Pro  
 915 920 925

Lys Phe Leu Gly Gly Ser Gln Val Ser Pro Ser Arg Ala Lys Ala Pro  
 930 935 940

Val Asn Thr Tyr Gly Pro Gly Phe Gly Pro Asn Leu Pro Asn His Lys  
 945 950 955 960

Ser Gly Ser Tyr Pro Thr Pro Ser Pro Cys His Glu Asn Phe Val Val  
 965 970 975

Gly Ala Asn Arg Ala Ser His Arg Ala Ala Ala Pro Pro Arg Leu Leu  
 980 985 990

Pro Pro Leu Pro Thr Cys Tyr Gly Pro Leu Lys Val Gly Gly Thr Asn  
 995 1000 1005

Pro Ser Cys Gly His Pro Glu Val Gly Arg Leu Gly Gly Gly Pro  
 1010 1015 1020

Ala Leu Tyr Pro Pro Pro Glu Gly Gln Val Cys Asn Pro Leu Asp  
 1025 1030 1035

Ser Leu Asp Leu Asp Asn Thr Gln Leu Asp Phe Val Ala Ile Leu  
 1040 1045 1050

Asp Glu Pro Gln Gly Leu Ser Pro Pro Pro Ser His Asp Gln Arg  
 1055 1060 1065

Gly Ser Ser Gly His Thr Pro Pro Pro Ser Gly Pro Pro Asn Met  
 1070 1075 1080

Ala Val Gly Asn Met Ser Val Leu Leu Arg Ser Leu Pro Gly Glu  
 1085 1090 1095

Thr Glu Phe Leu Asn Ser Ser Ala  
 1100 1105

```

<210> 31
<211> 1167
<212> DNA
<213> Homo sapiens

<400> 31
catgagtcag tgaacaggga atgggtgaat gacatttgtg ggtaggttat ttctagaagt      60
taggtgggca gcttgaagg cagaggcact tctacagact attccttggg gccacacgta      120
ggttcttgaa tcccgaatgg aaaggggaga ttgataattg gtgtgtttat gttcttaca      180
gtcttctgcc ttttaaaatc cagtcccagg acatcaaagc tctgcagaaa gaactcgagc      240
aat ttgccaa gctcctgaag cagaagagga tcaccctggg atatacacag gccgatgtgg      300
ggctcaccct gggggttcta tttgggaagg tattcagcca aacgaccatc tgccgctttg      360
aggctctgca gcttagcttc aagaacatgt gtaagctgcg gcccttgctg cagaagtggg      420
tgagggaagc tgacaacaat gaaaatcttc aggagatatg caaagcagaa accctcgtgc      480
aggcccgaag gagaaagcga accagtatcg agaaccgagt gagaggcaac ctggagaatt      540
tgttcttgca gtgcccgaag cgcacactgc agcagatcag ccacatcgcc cagcagcttg      600
ggctcgagaa ggatgtggtc cgagtgtggt tctgtaaccg gcgccagaag ggcaagcgat      660
caagcagcga ctatgcacaa cgagaggatt ttgaggctgc tgggtctcct ttctcagggg      720
gaccagtgtc ctttctctg gccccagggc cccatttttg taccacaggc tatgggagcc      780
ctcacttcac tgcactgtac tctcgggtcc ctttccctga gggggaagcc tttccccctg      840
tctccgtcac cactctgggc tctcccatgc attcaaactg aggtgcctgc ctttctagga      900
atgggggaca gggggagggg aggagctagg gaaagaaaac ctggagtttg tgccaggggt      960
tttgggatta agttcttcat tcactaagga aggaattggg aacacaaagg gtgggggcag     1020
gggagtttg ggcaactggt tggaggggaag gtgaagttca atgatgctct tgattttaat     1080
cccacatcat gtatcacttt tttcttaaat aaagaagcct gggacacagt agataggcaa     1140
aaaaaaaaa aaaaaaaaaa aaaaaaa                                     1167

```

```

<210> 32
<211> 164
<212> PRT
<213> Homo sapiens

```

```

<400> 32

```

```

Met Cys Lys Leu Arg Pro Leu Leu Gln Lys Trp Val Glu Glu Ala Asp
1           5           10           15

```

Asn Asn Glu Asn Leu Gln Glu Ile Cys Lys Ala Glu Thr Leu Val Gln  
20 25 30

Ala Arg Lys Arg Lys Arg Thr Ser Ile Glu Asn Arg Val Arg Gly Asn  
35 40 45

Leu Glu Asn Leu Phe Leu Gln Cys Pro Lys Pro Thr Leu Gln Gln Ile  
50 55 60

Ser His Ile Ala Gln Gln Leu Gly Leu Glu Lys Asp Val Val Arg Val  
65 70 75 80

Trp Phe Cys Asn Arg Arg Gln Lys Gly Lys Arg Ser Ser Ser Asp Tyr  
85 90 95

Ala Gln Arg Glu Asp Phe Glu Ala Ala Gly Ser Pro Phe Ser Gly Gly  
100 105 110

Pro Val Ser Phe Pro Leu Ala Pro Gly Pro His Phe Gly Thr Pro Gly  
115 120 125

Tyr Gly Ser Pro His Phe Thr Ala Leu Tyr Ser Ser Val Pro Phe Pro  
130 135 140

Glu Gly Glu Ala Phe Pro Pro Val Ser Val Thr Thr Leu Gly Ser Pro  
145 150 155 160

Met His Ser Asn

<210> 33  
<211> 2130  
<212> DNA  
<213> Homo sapiens

<400> 33  
ggcttgatt ctgaaacctt ccctgtatcc ctcctgagac atctttgctg caagatcgag 60  
gctgtcctct ggtgagaagg tggtaggct tcccgtcata ttccagctct gaacagcaac 120  
atggggtgca aagtcctgct caacattggg cagcagatgc tgcggcggaa ggtggtggac 180  
tgtagccggg aggagacgcg gctgtctcgc tgcctgaaca cttttgatct ggtggcctc 240  
ggggtgggca gcacactggg tgctggtgtc tacgtcctgg ctggagctgt ggcccgtgag 300

```

aatgcaggcc ctgccattgt catctccttc ctgatcgctg cgctggcctc agtgctggct 360
ggcctgtgct atggcgagtt tgggtgctcg gtccccaaga cgggctcagc ttacctctac 420
agctatgtca ccgttgagaga gctctggggc ttcacaccg gctggaactt aatcctctcc 480
tacatcatcg gtacttcaag cgtagcgagg gcctggagcg ccaccttcga cgagctgata 540
ggcagacca tcggggagtt ctacggaca cacatgactc tgaacgcccc cggcgtgctg 600
gctgaaaacc ccgacatatt cgcagtgatc ataattctca tcttgacagg acttttaact 660
cttgggtgtga aagagtcggc catggtcaac aaaatattca cttgtattaa cgtcctggtc 720
ctgggcttca taatgggtgc aggatttgtg aaaggatcgg ttaaaaactg gcagctcacg 780
gaggaggatt ttgggaacac atcaggccgt ctctgtttga acaatgacac aaaagaaggg 840
aagcccggtg ttgggtgatt catgcccttc gggttctctg gtgtcctgtc gggggcagcg 900
acttgcttct atgccttcgt gggctttgac tgcacgccca ccacagggtga agagggtgaag 960
aaccacaga aggccatccc cgtggggatc gtggcgctcc tcttgatctg cttcatcgcc 1020
tactttgggg tgtcggtgc cctcacgctc atgatgcctt acttctgcct ggacaataac 1080
agccccctgc ccgacgcctt taagcacgtg ggctgggaag gtgccaagta cgcagtggcc 1140
gtgggctccc tctgcgtctt ttccgccagt cttctagggt ccatgtttcc catgcctcgg 1200
gttatctatg ccatggctga ggatggactg ctatttaaatt tcttagccaa cgtcaatgat 1260
aggacaaaaa caccaataat cgccacatta gcctcgggtg ccgttgctgc tgtgatggcc 1320
ttcctctttg acctgaagga cttgggtggac ctcatgtcca ttggcactct cctggcttac 1380
tcgttggtgg ctgcctgtgt gttggtctta cgggtaccagc cagagcagcc taacctggta 1440
taccagatgg ccagtacttc cgacgagtta gatccagcag accaaaatga attggcaagc 1500
accaatgatt ccagctggg gtttttacca gaggcagaga tgttctcttt gaaaaccata 1560
ctctcaccca aaaacatgga gccttccaaa atctctgggc taattgtgaa catttcaacc 1620
agccttatag ctgttctcat catcaccttc tgcattgtga ccgtgcttgg aagggaggct 1680
ctcaccaaag gggcgctgtg ggcagtcttt ctgctcgag ggtctgccct cctctgtgcc 1740
gtggtcacgg gcgtcatctg gaggcagccc gagagcaaga ccaagctctc atttaagggt 1800
cccttctgc cagtgtccc catcctgagc atcttcgtga acgtctatct catgatgcag 1860
ctggaccagg gcacctgggt ccggtttgct gtgtggatgc tgataggctt catcatctac 1920
tttggtatg gcctgtggca cagcgaggag gcgtccctgg atgccgacca agcaaggact 1980

```



cctgacggca acttggacca gtgcaagtga cgcacagccc cgccccccgg aggtggcagc 2040  
 agccccgagg gacgccccca gaggaccggg aggcacccca ccctccccac cagtgaaca 2100  
 gaaaccacct gcgtccacac cctcactgca 2130

<210> 34  
 <211> 629  
 <212> PRT  
 <213> Homo sapiens

<400> 34

Met Gly Cys Lys Val Leu Leu Asn Ile Gly Gln Gln Met Leu Arg Arg  
 1 5 10 15

Lys Val Val Asp Cys Ser Arg Glu Glu Thr Arg Leu Ser Arg Cys Leu  
 20 25 30

Asn Thr Phe Asp Leu Val Ala Leu Gly Val Gly Ser Thr Leu Gly Ala  
 35 40 45

Gly Val Tyr Val Leu Ala Gly Ala Val Ala Arg Glu Asn Ala Gly Pro  
 50 55 60

Ala Ile Val Ile Ser Phe Leu Ile Ala Ala Leu Ala Ser Val Leu Ala  
 65 70 75 80

Gly Leu Cys Tyr Gly Glu Phe Gly Ala Arg Val Pro Lys Thr Gly Ser  
 85 90 95

Ala Tyr Leu Tyr Ser Tyr Val Thr Val Gly Glu Leu Trp Ala Phe Ile  
 100 105 110

Thr Gly Trp Asn Leu Ile Leu Ser Tyr Ile Ile Gly Thr Ser Ser Val  
 115 120 125

Ala Arg Ala Trp Ser Ala Thr Phe Asp Glu Leu Ile Gly Arg Pro Ile  
 130 135 140

Gly Glu Phe Ser Arg Thr His Met Thr Leu Asn Ala Pro Gly Val Leu  
 145 150 155 160

Ala Glu Asn Pro Asp Ile Phe Ala Val Ile Ile Ile Leu Ile Leu Thr  
 165 170 175

Gly Leu Leu Thr Leu Gly Val Lys Glu Ser Ala Met Val Asn Lys Ile  
 180 185 190

Phe Thr Cys Ile Asn Val Leu Val Leu Gly Phe Ile Met Val Ser Gly  
 195 200 205

Phe Val Lys Gly Ser Val Lys Asn Trp Gln Leu Thr Glu Glu Asp Phe  
 210 215 220

Gly Asn Thr Ser Gly Arg Leu Cys Leu Asn Asn Asp Thr Lys Glu Gly  
 225 230 235 240

Lys Pro Gly Val Gly Gly Phe Met Pro Phe Gly Phe Ser Gly Val Leu  
 245 250 255

Ser Gly Ala Ala Thr Cys Phe Tyr Ala Phe Val Gly Phe Asp Cys Ile  
 260 265 270

Ala Thr Thr Gly Glu Glu Val Lys Asn Pro Gln Lys Ala Ile Pro Val  
 275 280 285

Gly Ile Val Ala Ser Leu Leu Ile Cys Phe Ile Ala Tyr Phe Gly Val  
 290 295 300

Ser Ala Ala Leu Thr Leu Met Met Pro Tyr Phe Cys Leu Asp Asn Asn  
 305 310 315 320

Ser Pro Leu Pro Asp Ala Phe Lys His Val Gly Trp Glu Gly Ala Lys  
 325 330 335

Tyr Ala Val Ala Val Gly Ser Leu Cys Ala Leu Ser Ala Ser Leu Leu  
 340 345 350

Gly Ser Met Phe Pro Met Pro Arg Val Ile Tyr Ala Met Ala Glu Asp  
 355 360 365

Gly Leu Leu Phe Lys Phe Leu Ala Asn Val Asn Asp Arg Thr Lys Thr  
 370 375 380

Pro Ile Ile Ala Thr Leu Ala Ser Gly Ala Val Ala Ala Val Met Ala  
 385 390 395 400

Phe Leu Phe Asp Leu Lys Asp Leu Val Asp Leu Met Ser Ile Gly Thr  
 405 410 415

Leu Leu Ala Tyr Ser Leu Val Ala Ala Cys Val Leu Val Leu Arg Tyr  
 420 425 430

Gln Pro Glu Gln Pro Asn Leu Val Tyr Gln Met Ala Ser Thr Ser Asp  
 435 440 445

Glu Leu Asp Pro Ala Asp Gln Asn Glu Leu Ala Ser Thr Asn Asp Ser  
 450 455 460

Gln Leu Gly Phe Leu Pro Glu Ala Glu Met Phe Ser Leu Lys Thr Ile  
 465 470 475 480

Leu Ser Pro Lys Asn Met Glu Pro Ser Lys Ile Ser Gly Leu Ile Val  
 485 490 495

Asn Ile Ser Thr Ser Leu Ile Ala Val Leu Ile Ile Thr Phe Cys Ile  
 500 505 510

Val Thr Val Leu Gly Arg Glu Ala Leu Thr Lys Gly Ala Leu Trp Ala  
 515 520 525

Val Phe Leu Leu Ala Gly Ser Ala Leu Leu Cys Ala Val Val Thr Gly  
 530 535 540

Val Ile Trp Arg Gln Pro Glu Ser Lys Thr Lys Leu Ser Phe Lys Val  
 545 550 555 560

Pro Phe Leu Pro Val Leu Pro Ile Leu Ser Ile Phe Val Asn Val Tyr  
 565 570 575

Leu Met Met Gln Leu Asp Gln Gly Thr Trp Val Arg Phe Ala Val Trp  
 580 585 590

Met Leu Ile Gly Phe Ile Ile Tyr Phe Gly Tyr Gly Leu Trp His Ser  
 595 600 605

Glu Glu Ala Ser Leu Asp Ala Asp Gln Ala Arg Thr Pro Asp Gly Asn  
 610 615 620

Leu Asp Gln Cys Lys  
625

<210> 35  
<211> 2627  
<212> DNA  
<213> Homo sapiens

<400> 35  
ggtctgtcca cttgccggtc cctcagaccg tcggcggtct ctgtccgctt cgggacctgt 60  
ccgctggtcg ctccggtcc gatggctcct ggccgcggaa ccttaggcct ggccctggtc 120  
tccgagcgcg ggttcgccgg gaggagcgtg tggcggggt gtgccgggc gtgagtgcgc 180  
cgagcatggg gctgagcctg gtgtggggag tgggtatctg cggagccggc ctgaacccca 240  
cctcagccgg gcgcggggag ggggctccgt gcgtgtgata gtgcagctgt gagcgcgtag 300  
ccgccccgcg gggctccgct gcaggcccct cagccccagg agcagtactc gctcttcagg 360  
gcctgccttg gatcctggag gctacacagc tgccactcc tcctggggag gctgccgtgg 420  
agggcatgga gatccctgcc ccggagcccg agaagacagg aatcggtgag tttcaaggat 480  
gtggctgtgg acttcacca ggaggagtgg ggtcaactag actcccctca gagggccttg 540  
taccgggatg tgatgttga gaactaccag aaccttcttg ccctaggacc tccactgcac 600  
aagccagatg tgatctctca tctggaacga ggcgaggagc catggagcat gcagagggaa 660  
gtccccagag ggccctgtcc agaatgggag ctgaaggcgg tgccctctca acagcagggc 720  
atttgcaaag aagaaccggc ccaggagccc atcatggagc ggcccctcgg cggggcgag 780  
gcgtgggggc gccaggcagg tgctctgcag aggagtcagg ctgcgccctg ggcgcccga 840  
cctgccatgg tctgggacgt ccctgtagag gaattcccc tcagggtgtcc cctcttcgcc 900  
cagcaacgcg ttcccagggg gggacccttg ctggacacac gcaagaacgt ccaggccact 960  
gagggcagaa ccaaggcccc cgcgagactg tgtgcagggg aaaacgcctc cacgccaagt 1020  
gagccagaaa agttccccca ggtgcgccgg cagcgcgggg cgggcgccgg ggagggcgag 1080  
ttcgtgtgcg gcgagtgcgg gaaggcgttc cgccagagct cctccctcac gctgcaccgg 1140  
cgctggcaca gccgggagaa ggcttacaag tgcgatgaat gcggcaaggc cttcacctgg 1200  
agcaccaacc ttctggagca ccggcgcatc cacaccggcg agaagccctt cttctgcggc 1260  
gagtgcggga aggccttcag ctgccactcg tccctcaacg tgcaccagcg catccacag 1320  
ggcgagcggc cctacaagtg cagcgctgc gagaaggcct tcagctgcag ctcgctgctc 1380

```

agcatgcacc6 tgcgggtgca caccggcgag aagccctacc ggtgcggcga gtgcggcaag 1440
gccttcaacc agcgtacaca cctcacacgc caccaccgca tccacacggg cgagaagccc 1500
taccagtgcg gtccttgcgg caaggccttc acctgccact catccctcac cgtgcatgag 1560
aagatccaca gcgggggacaa gccgttcaag tgcagcgact gcgagaaggc cttcaacagc 1620
cgctcgcgcc tcaccctcca ccagaggacg cacacgggcg agaagccctt caagtgcgcc 1680
gactgcggga agggcttcag ctgccacgcg tacctgctcg tgcaccggcg catccacagc 1740
ggcgagaagc ctttcaagtg caacgagtgc ggcaaagcct tcagctcca cgcctacctc 1800
atcgtgcacc ggcgcatcca cacaggcgag aagcccttcg actgcagcca gtgttgaag 1860
gccttcagct gccactcgtc cctcatcgtg caccagcgca tccacaccgg tgagaagccc 1920
tacaagtgca gcgagtgcgg cagagccttc agccagaacc actgtctcat taaacatcag 1980
aaaatccact ccggggagaa gtcgtttaag tgtgagaaat gtggggagat gttcaactgg 2040
agctcgcacc tcaactgagca ccagaggctg cacagcgagg ggaagccctt ggccatccag 2100
ttcaacaaac acctgctcag cacatactac gtgcctggca gcctgctggg tgcaggggat 2160
gctggactga gggacgtgga tcccatcgac gcgctggatg tggcaaagct cttgtgcgtg 2220
gttcccccca gagctggcag gaatttctcc ctggggagca aacctcgaaa ctaacatgat 2280
gtgctttggt gtcagtagct gctttctgag ctactcaaca aggaaagcac cctggtcctc 2340
cctggctcct agatccagac caccttcctc cagggtgtggg agccttgcct tatcacccca 2400
atcaggtctg catgccaggg tgctcctct agttaaaagtc agtcacctcc ccagaagggc 2460
cacactccag gaggagtgtt gagagtcatt tgaggtagtc ttgccacctg ttttccttga 2520
tgggcctgga agttgttgac aaggggaaag atctttcttg ccaataaaaa gaagggat 2580
cgttgggaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 2627

```

```

<210> 36
<211> 573
<212> PRT
<213> Homo sapiens

```

```

<400> 36

```

```

Met Leu Glu Asn Tyr Gln Asn Leu Leu Ala Leu Gly Pro Pro Leu His
1           5           10           15

```

```

Lys Pro Asp Val Ile Ser His Leu Glu Arg Gly Glu Glu Pro Trp Ser
20           25           30

```

Met Gln Arg Glu Val Pro Arg Gly Pro Cys Pro Glu Trp Glu Leu Lys  
 35 40 45  
 Ala Val Pro Ser Gln Gln Gln Gly Ile Cys Lys Glu Glu Pro Ala Gln  
 50 55 60  
 Glu Pro Ile Met Glu Arg Pro Leu Gly Gly Ala Gln Ala Trp Gly Arg  
 65 70 75 80  
 Gln Ala Gly Ala Leu Gln Arg Ser Gln Ala Ala Pro Trp Ala Pro Ala  
 85 90 95  
 Pro Ala Met Val Trp Asp Val Pro Val Glu Glu Phe Pro Leu Arg Cys  
 100 105 110  
 Pro Leu Phe Ala Gln Gln Arg Val Pro Glu Gly Gly Pro Leu Leu Asp  
 115 120 125  
 Thr Arg Lys Asn Val Gln Ala Thr Glu Gly Arg Thr Lys Ala Pro Ala  
 130 135 140  
 Arg Leu Cys Ala Gly Glu Asn Ala Ser Thr Pro Ser Glu Pro Glu Lys  
 145 150 155 160  
 Phe Pro Gln Val Arg Arg Gln Arg Gly Ala Gly Ala Gly Glu Gly Glu  
 165 170 175  
 Phe Val Cys Gly Glu Cys Gly Lys Ala Phe Arg Gln Ser Ser Ser Leu  
 180 185 190  
 Thr Leu His Arg Arg Trp His Ser Arg Glu Lys Ala Tyr Lys Cys Asp  
 195 200 205  
 Glu Cys Gly Lys Ala Phe Thr Trp Ser Thr Asn Leu Leu Glu His Arg  
 210 215 220  
 Arg Ile His Thr Gly Glu Lys Pro Phe Phe Cys Gly Glu Cys Gly Lys  
 225 230 235 240  
 Ala Phe Ser Cys His Ser Ser Leu Asn Val His Gln Arg Ile His Thr  
 245 250 255

Gly Glu Arg Pro Tyr Lys Cys Ser Ala Cys Glu Lys Ala Phe Ser Cys  
 260 265 270

Ser Ser Leu Leu Ser Met His Leu Arg Val His Thr Gly Glu Lys Pro  
 275 280 285

Tyr Arg Cys Gly Glu Cys Gly Lys Ala Phe Asn Gln Arg Thr His Leu  
 290 295 300

Thr Arg His His Arg Ile His Thr Gly Glu Lys Pro Tyr Gln Cys Gly  
 305 310 315 320

Ser Cys Gly Lys Ala Phe Thr Cys His Ser Ser Leu Thr Val His Glu  
 325 330 335

Lys Ile His Ser Gly Asp Lys Pro Phe Lys Cys Ser Asp Cys Glu Lys  
 340 345 350

Ala Phe Asn Ser Arg Ser Arg Leu Thr Leu His Gln Arg Thr His Thr  
 355 360 365

Gly Glu Lys Pro Phe Lys Cys Ala Asp Cys Gly Lys Gly Phe Ser Cys  
 370 375 380

His Ala Tyr Leu Leu Val His Arg Arg Ile His Ser Gly Glu Lys Pro  
 385 390 395 400

Phe Lys Cys Asn Glu Cys Gly Lys Ala Phe Ser Ser His Ala Tyr Leu  
 405 410 415

Ile Val His Arg Arg Ile His Thr Gly Glu Lys Pro Phe Asp Cys Ser  
 420 425 430

Gln Cys Trp Lys Ala Phe Ser Cys His Ser Ser Leu Ile Val His Gln  
 435 440 445

Arg Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Ser Glu Cys Gly Arg  
 450 455 460

Ala Phe Ser Gln Asn His Cys Leu Ile Lys His Gln Lys Ile His Ser  
 465 470 475 480

Gly Glu Lys Ser Phe Lys Cys Glu Lys Cys Gly Glu Met Phe Asn Trp  
                                     485                                    490                                    495

Ser Ser His Leu Thr Glu His Gln Arg Leu His Ser Glu Gly Lys Pro  
                                     500                                    505                                    510

Leu Ala Ile Gln Phe Asn Lys His Leu Leu Ser Thr Tyr Tyr Val Pro  
                                     515                                    520                                    525

Gly Ser Leu Leu Gly Ala Gly Asp Ala Gly Leu Arg Asp Val Asp Pro  
                                     530                                    535                                    540

Ile Asp Ala Leu Asp Val Ala Lys Leu Leu Cys Val Val Pro Pro Arg  
                                     545                                    550                                    555                                    560

Ala Gly Arg Asn Phe Ser Leu Gly Ser Lys Pro Arg Asn  
                                     565                                    570

<210> 37  
 <211> 6586  
 <212> DNA  
 <213> Homo sapiens

<400> 37  
 ctggggagcc ggcgctggag gtggtgagtg gcgtggggac tgtgtcgagg gggccccaa 60  
 ggtgccggac cctgcggagg ggcgaagttt cggcactggg gagggcgtgc ggacgctttc 120  
 cctacaggcg accactgctc tgcgggcggg tggctcttagc tccagtcccc cattcagttc 180  
 ctcagcattc caggtcggcg gcgaaggggt ccccgaacga agggcgcaag gcagcgtctc 240  
 tgctgggacc gggaagccgg acttcagggc ctctcgggcc gtgggcttct ccccgagtct 300  
 ccccgagtcg gttggcatta agagtttagc agatactttc agaaatggat acataagaaa 360  
 tggctggaaa tcaaatgaat gtccaaagaa gagcttaggg tcttagtaac attctttttt 420  
 aaaataactg tctgccaaaa tgtcattaca cagtactcat aatagaaata acagcggtag 480  
 tattcttgat attccttctt cccaaaatag ttcactcactg aatgccctca cccacagtag 540  
 ccgacttaag ctgcatttga agtcggatat gtcagaatgt gaaaatgatg atccattatt 600  
 gagatctgca ggtaaagtca gagacataaa tagaacttat gttatttctg ccagtagaaa 660  
 aacagcagac atgcccctta cccctaattc tgtaggtaga ttggcacttc agaggagaac 720  
 tacaaggaac aaagaatcat ctttgcttgt tagtgagttg gaagacacaa ctgaaaaaac 780



agcagaaaca cgtcttacat tacaacgtcg tgctaaaaca gattctgcag aaaagtggaa 840  
 aacagctgaa atagattctg tcaaaatgac actgaatgtg ggaggtgaaa cagaaaataa 900  
 tgggtgtttct aaggaaagta gaacaaatgt aaggattgta aataatgcta aaaactcttt 960  
 tgttgccctct tctgtacctt tagatgaaga tccacaggtc attgaaatga tggctgataa 1020  
 gaaatacaaaa gaaacatttt ctgccccag tagagcaaat gaaaatgttg cacttaagta 1080  
 ctcaagtaat agaccacca ttgcttccct gagtcagact gaagttgtta gatcaggaca 1140  
 cttgacaacg aaacctactc agagcaagtt ggatatcaaa gtgttgggaa caggaaactt 1200  
 gtatcataga agtattggga aggaaattgc aaaaacttca aataaatgtg ggagcttaga 1260  
 aaaaagaaca cctacaaaat gtacaacaga acacaaactg acaacaaagt gcagcctgcc 1320  
 tcagcttaag agccagctc catcaatact gaagaataga atgtctaacc ttcaagttaa 1380  
 acaaagacca aaaagttcct ttcttgcaaa taaacaggaa agatccgcag aaaatacaat 1440  
 tcttcccgaa gaagaaactg tagttcagaa cacctctgca ggaaaagacc ccttaaaagt 1500  
 agagaatagt caagtgcag tggcagtag cgtaagacct ttcaccaaga gagagaagat 1560  
 tgaaaaagca tcccaggtag tcttcatgag tgggaaagaa ataactgtgg aacaccctga 1620  
 cacgaaacaa gtttataatt ttatttatga tgtttcattc tggctctttg atgaatgtca 1680  
 tcctcactac gtagccaga caactgtcta tgagaagcta gcagcaccac tctagaaag 1740  
 agccttcgaa ggcttcaata cctgtctttt tgcttatggt cagactggct ctggaaaatc 1800  
 atatacgatg atgggattta gtgaagaacc aggaataatt ccaagatttt gtgaagatct 1860  
 tttttctcaa gtagccagaa aacaaaccca agaggtcagc tatcacattg aaatgagctt 1920  
 ctttgaagta tataatgaaa aaattcacga ctttctggtt tgtaaagatg aaatgggca 1980  
 gagaaagcaa ccaactgagag tgagggaaca tcctgtttat ggaccatatg ttgaagcact 2040  
 gtcaatgaac attgtcagtt cttacgctga tatccagagt tggctagaat tgggaaataa 2100  
 acaaagagct actgctgcta ctggtatgaa tgataaaagt tcccgatctc attcagtttt 2160  
 caccctggtg atgaccaga ccaagacaga atttgtggaa ggggaagaac acgatcacag 2220  
 aataacaagt cgaattaacc taatagatct ggcaggcagt gagcgctgct ctacggctca 2280  
 cactaatgga gatcgactaa aggaaggtgt gagtattaat aagtccttgc taactttggg 2340  
 aaaagttata tctgcacttt cggaacaagc aaaccaaagg agtgttttta ttccttatcg 2400  
 tgaatctgtt cttacatggc tgttaaaaga aagtctgggt ggaaattcaa aaactgcaat 2460

gattgctacg attagtcccg ctgccagcaa catagaagaa acattaagca cacttagata	2520
tgctaaccaa gcccgtttaa tagtcaacat tgctaaagta aatgaagata tgaacgctaa	2580
gttaattaga gaattgaagg cagaaattgc aaagctaaaa gctgctcaga gaaacagtcg	2640
gaatattgac cctgaacgat acaggctctg tcggcaagaa ataacatcct taagaatgaa	2700
actgcatcaa caggagagag acatggcaga aatgcaaaga gtgtggaaag aaaagtttga	2760
acaagctgaa aaaagaaaac ttcaagaaac aaaagagtta cagaaagcag gaattatggt	2820
tcaaattggac aatcattttac caaaccttgt taatctgaat gaagatccac aactatctga	2880
gatgctgcta tatatgataa aagaaggaac aactacagtt ggaaagtata aaccaaactc	2940
aagccatgat attcagttat ctggggtgct gattgctgat gatcattgta ctatcaaaaa	3000
ttttggtggg acagtgaagta ttatcccagt tggggaagca aagacatatg taaatggaaa	3060
acatattttg gaaatcacag tattacgtca tggatgatcga gtgattcttg gtggagatca	3120
ttattttaga tttaatcatc cagtagaagt ccagaaagga aaaaggccat ctggaagaga	3180
tactcctata agtgagggtc caaaagactt tgaatttgca aaaaatgagt tgctcatggc	3240
acagagatca caacttgaag cagaaataaa agaggctcag ttgaaggcaa aggaagaaat	3300
gatgcaagga atccagattg caaaagaaat ggctcagcaa gagctttctt ctcaaaaagc	3360
tgcatatgaa agcaaaataa aagcactgga agcagaactg agagaagagt ctcaaaggaa	3420
aaaaatgcag gaaataaata accagaaggc taatcacaaa attgaggaat tagaaaaggc	3480
aaagcagcat cttgaacagg aaatatatgt caacaaaaag cgattagaaa tggagacatt	3540
ggctacaaaa caggcttttag aagaccatag catccgccat gcaagaattc tggagacttt	3600
agaaactgaa aagcaaaaaa ttgctaaaga agtacaaatt ctacagcaga atcggataa	3660
tagggataaa acttttacag tgcagacaac ttggagctct atgaaactct caatgatgat	3720
tcaggaagcc aatgctatca gcagcaaatt gaaaacatac tatgtttttg gcagacatga	3780
tatatcagat aaaagtagtt ctgacacttc tattcggtt cgtaacctga aactaggaat	3840
ctcaacattc tggagtctgg aaaagtttga atctaaactt gcagcaatga aagaacttta	3900
tgagagtaat ggtagtaaca ggggtgaaga tgccttttgt gatcctgaag atgaatggga	3960
acccgacatt acagatgcac cagtttcttc actttctaga aggaggagta ggagtttgat	4020
gaagaacaga agaatttctg gttgtttaca tgacatacaa gtccatccaa ttaagaattt	4080
gcattcttca cattcatcag gtttaatgga caaatcaagc actatttact caaattcagc	4140

agagtccttt cttcctggaa tttgcaaaga attgattggt tcttcgtttag attttttttg 4200  
 acagagttat gatgaagaaa gaactatagc agacagccta attaatagtt ttcttaaaat 4260  
 ttataatggg ctatttgcca tttccaaggc tcatgaagaa caagatgaag aaagtcaaga 4320  
 taacttgttt tcttctgata gagcaatcca gtcacttact attcagactg catgtgcttt 4380  
 tgagcagcta gtagtgctaa tgaacactg gctgagtgat ttactgcctt gtaccaacat 4440  
 agcaagactt gaggatgagt tgagacaaga agttaaaaaa ctgggaggct acttacagtt 4500  
 atttttgcag ggatgctgtt tggatatttc atcaatgata aaagaggctc aaaagaatgc 4560  
 aatccaaatt gtacaacaag ctgtaaagta tgtggggcag ttagcagttc tgaaaggag 4620  
 caagctacat tttctagaaa acggtaacaa taaagctgcc agtgtccagg aggaattcat 4680  
 ggatgctgtt tgtgatggtg taggcttagg aatgaagatt ttattagatt ctggactgga 4740  
 aaaagcaaaa gaacttcagc atgaactctt taggcagtgt acaaaaaatg aggttaccaa 4800  
 agaaatgaaa actaatgcca tgggattgat tagatctctt gaaaacatct ttgctgaatc 4860  
 gaaaattaaa agtttcagaa ggcaagtaca agaagaaaac tttgaatacc aagatttcaa 4920  
 gaggatggtt aatcgtgctc cagaattctt aaagttaaaa cattgcttag agaaagctat 4980  
 tgaaattatt atttctgcac tgaaaggatg ccatagtgat ataatcttc tccagacttg 5040  
 tgttgaaagt attcgcaact tggccagtga tttttacagt gacttcagtg tgccttctac 5100  
 ttctgttggc agctatgaga gtagagtaac tcacattgtc caccaggaac tagaatctct 5160  
 agctaagtct ctctctttt gttttgaatc tgaagaaagc cctgatttgt tgaaaccctg 5220  
 ggaaacttat aatcaaaaata ccaaagaaga acaccaacaa tctaaatcaa gcgggattga 5280  
 cggcagtaag aataaagggtg taccaaagcg tgtctatgag ctccatggct catccccagc 5340  
 agtgagctca gaggaatgca caccagtag gattcagtgg gtgtgaatac tgatgtgtag 5400  
 gcacttttat gaccacccat gaaagaaaaa gaacacttgc tcggttaattt tctttatgca 5460  
 ggagagttta agagaaatca gcacagatat ttcaaaaaaag tccatgtctt tttatcttta 5520  
 aaatatctat ttatcaaagg ccagacacag tggctcacgc ctgtaatccc agcactttgg 5580  
 gaggcgggca gatcacaagg tcaggagttt gagaccggcc tggccaacat ggtgaaaccc 5640  
 cgtctctact aaaaatacaa aaatttgctg ggcattggtg cgctgcctg taatcccagc 5700  
 tactaggggg gctgaggcag gaggatcgct tgaacctgag aggcagaggt tgcagtgagc 5760  
 caagatcatg ccactttact ccagtctgag caacagaacg agacttagtc aaaataaata 5820

aataaataag taaataaata aataaataaa atatctttta tctttaaagt gtttaacatt 5880  
ggtatactgt ctgtagttgg ttcattagtc gtttataaag ggttattttc tcatgagtgg 5940  
aaacctgaac aatcagttac ctttgtgcct atgccttctc tctcctcaga cagctgggat 6000  
gtttatgggtg aaatggcctg tacaagttta actaagacaa cttaacttgc attgttaatc 6060  
aaaaattctt ttctcaaagg gttaactggg tgccattttg aatagtatgt tcaagggtgt 6120  
agcttcctgt ttctttccaa attataagta gctacctaaa tatagtataa ttatatatta 6180  
ataatatggc ttgctggcac agtagtttac cctgttatct gtgtttcata atgggggctg 6240  
tatgaatatt atttaaaact aataaaatgt tgccagaatt atactaaact gttggatgag 6300  
attaggagat cagaggctgg accttctctt gataatgctt gttttgttaa aggtataatg 6360  
aaataatttg tatatgattt gatgaagatt aaagaccctt atttccaca gctttaaaaa 6420  
aaaaccttta tttatgatca agtaataaag ataatatctt acttgtggga tcttacatta 6480  
tggaatatgt ttgacgtttt tgacctcaag agtatgtata atttgaagag atactttgta 6540  
actatgcttg ggtgatattg agcagttcct aaagaataat tcattt 6586

<210> 38  
<211> 1648  
<212> PRT  
<213> Homo sapiens

<400> 38

Met Ser Leu His Ser Thr His Asn Arg Asn Asn Ser Gly Asp Ile Leu  
1 5 10 15

Asp Ile Pro Ser Ser Gln Asn Ser Ser Ser Leu Asn Ala Leu Thr His  
20 25 30

Ser Ser Arg Leu Lys Leu His Leu Lys Ser Asp Met Ser Glu Cys Glu  
35 40 45

Asn Asp Asp Pro Leu Leu Arg Ser Ala Gly Lys Val Arg Asp Ile Asn  
50 55 60

Arg Thr Tyr Val Ile Ser Ala Ser Arg Lys Thr Ala Asp Met Pro Leu  
65 70 75 80

Thr Pro Asn Pro Val Gly Arg Leu Ala Leu Gln Arg Arg Thr Thr Arg  
85 90 95







Asn Lys Glu Ser Ser Leu Leu Val Ser Glu Leu Glu Asp Thr Thr Glu  
 100 105 110  
 Lys Thr Ala Glu Thr Arg Leu Thr Leu Gln Arg Arg Ala Lys Thr Asp  
 115 120 125  
 Ser Ala Glu Lys Trp Lys Thr Ala Glu Ile Asp Ser Val Lys Met Thr  
 130 135 140  
 Leu Asn Val Gly Gly Glu Thr Glu Asn Asn Gly Val Ser Lys Glu Ser  
 145 150 155 160  
 Arg Thr Asn Val Arg Ile Val Asn Asn Ala Lys Asn Ser Phe Val Ala  
 165 170 175  
 Ser Ser Val Pro Leu Asp Glu Asp Pro Gln Val Ile Glu Met Met Ala  
 180 185 190  
 Asp Lys Lys Tyr Lys Glu Thr Phe Ser Ala Pro Ser Arg Ala Asn Glu  
 195 200 205  
 Asn Val Ala Leu Lys Tyr Ser Ser Asn Arg Pro Pro Ile Ala Ser Leu  
 210 215 220  
 Ser Gln Thr Glu Val Val Arg Ser Gly His Leu Thr Thr Lys Pro Thr  
 225 230 235 240  
 Gln Ser Lys Leu Asp Ile Lys Val Leu Gly Thr Gly Asn Leu Tyr His  
 245 250 255  
 Arg Ser Ile Gly Lys Glu Ile Ala Lys Thr Ser Asn Lys Phe Gly Ser  
 260 265 270  
 Leu Glu Lys Arg Thr Pro Thr Lys Cys Thr Thr Glu His Lys Leu Thr  
 275 280 285  
 Thr Lys Cys Ser Leu Pro Gln Leu Lys Ser Pro Ala Pro Ser Ile Leu  
 290 295 300  
 Lys Asn Arg Met Ser Asn Leu Gln Val Lys Gln Arg Pro Lys Ser Ser  
 305 310 315 320



Phe Leu Ala Asn Lys Gln Glu Arg Ser Ala Glu Asn Thr Ile Leu Pro  
 325 330 335

Glu Glu Glu Thr Val Val Gln Asn Thr Ser Ala Gly Lys Asp Pro Leu  
 340 345 350

Lys Val Glu Asn Ser Gln Val Thr Val Ala Val Arg Val Arg Pro Phe  
 355 360 365

Thr Lys Arg Glu Lys Ile Glu Lys Ala Ser Gln Val Val Phe Met Ser  
 370 375 380

Gly Lys Glu Ile Thr Val Glu His Pro Asp Thr Lys Gln Val Tyr Asn  
 385 390 395 400

Phe Ile Tyr Asp Val Ser Phe Trp Ser Phe Asp Glu Cys His Pro His  
 405 410 415

Tyr Ala Ser Gln Thr Thr Val Tyr Glu Lys Leu Ala Ala Pro Leu Leu  
 420 425 430

Glu Arg Ala Phe Glu Gly Phe Asn Thr Cys Leu Phe Ala Tyr Gly Gln  
 435 440 445

Thr Gly Ser Gly Lys Ser Tyr Thr Met Met Gly Phe Ser Glu Glu Pro  
 450 455 460

Gly Ile Ile Pro Arg Phe Cys Glu Asp Leu Phe Ser Gln Val Ala Arg  
 465 470 475 480

Lys Gln Thr Gln Glu Val Ser Tyr His Ile Glu Met Ser Phe Phe Glu  
 485 490 495

Val Tyr Asn Glu Lys Ile His Asp Leu Leu Val Cys Lys Asp Glu Asn  
 500 505 510

Gly Gln Arg Lys Gln Pro Leu Arg Val Arg Glu His Pro Val Tyr Gly  
 515 520 525

Pro Tyr Val Glu Ala Leu Ser Met Asn Ile Val Ser Ser Tyr Ala Asp  
 530 535 540

Ile Gln Ser Trp Leu Glu Leu Gly Asn Lys Gln Arg Ala Thr Ala Ala  
 545 550 555 560

Thr Gly Met Asn Asp Lys Ser Ser Arg Ser His Ser Val Phe Thr Leu  
 565 570 575

Val Met Thr Gln Thr Lys Thr Glu Phe Val Glu Gly Glu Glu His Asp  
 580 585 590

His Arg Ile Thr Ser Arg Ile Asn Leu Ile Asp Leu Ala Gly Ser Glu  
 595 600 605

Arg Cys Ser Thr Ala His Thr Asn Gly Asp Arg Leu Lys Glu Gly Val  
 610 615 620

Ser Ile Asn Lys Ser Leu Leu Thr Leu Gly Lys Val Ile Ser Ala Leu  
 625 630 635 640

Ser Glu Gln Ala Asn Gln Arg Ser Val Phe Ile Pro Tyr Arg Glu Ser  
 645 650 655

Val Leu Thr Trp Leu Leu Lys Glu Ser Leu Gly Gly Asn Ser Lys Thr  
 660 665 670

Ala Met Ile Ala Thr Ile Ser Pro Ala Ala Ser Asn Ile Glu Glu Thr  
 675 680 685

Leu Ser Thr Leu Arg Tyr Ala Asn Gln Ala Arg Leu Ile Val Asn Ile  
 690 695 700

Ala Lys Val Asn Glu Asp Met Asn Ala Lys Leu Ile Arg Glu Leu Lys  
 705 710 715 720

Ala Glu Ile Ala Lys Leu Lys Ala Ala Gln Arg Asn Ser Arg Asn Ile  
 725 730 735

Asp Pro Glu Arg Tyr Arg Leu Cys Arg Gln Glu Ile Thr Ser Leu Arg  
 740 745 750

Met Lys Leu His Gln Gln Glu Arg Asp Met Ala Glu Met Gln Arg Val  
 755 760 765

Trp Lys Glu Lys Phe Glu Gln Ala Glu Lys Arg Lys Leu Gln Glu Thr  
 770 775 780  
 Lys Glu Leu Gln Lys Ala Gly Ile Met Phe Gln Met Asp Asn His Leu  
 785 790 795 800  
 Pro Asn Leu Val Asn Leu Asn Glu Asp Pro Gln Leu Ser Glu Met Leu  
 805 810 815  
 Leu Tyr Met Ile Lys Glu Gly Thr Thr Thr Val Gly Lys Tyr Lys Pro  
 820 825 830  
 Asn Ser Ser His Asp Ile Gln Leu Ser Gly Val Leu Ile Ala Asp Asp  
 835 840 845  
 His Cys Thr Ile Lys Asn Phe Gly Gly Thr Val Ser Ile Ile Pro Val  
 850 855 860  
 Gly Glu Ala Lys Thr Tyr Val Asn Gly Lys His Ile Leu Glu Ile Thr  
 865 870 875 880  
 Val Leu Arg His Gly Asp Arg Val Ile Leu Gly Gly Asp His Tyr Phe  
 885 890 895  
 Arg Phe Asn His Pro Val Glu Val Gln Lys Gly Lys Arg Pro Ser Gly  
 900 905 910  
 Arg Asp Thr Pro Ile Ser Glu Gly Pro Lys Asp Phe Glu Phe Ala Lys  
 915 920 925  
 Asn Glu Leu Leu Met Ala Gln Arg Ser Gln Leu Glu Ala Glu Ile Lys  
 930 935 940  
 Glu Ala Gln Leu Lys Ala Lys Glu Glu Met Met Gln Gly Ile Gln Ile  
 945 950 955 960  
 Ala Lys Glu Met Ala Gln Gln Glu Leu Ser Ser Gln Lys Ala Ala Tyr  
 965 970 975  
 Glu Ser Lys Ile Lys Ala Leu Glu Ala Glu Leu Arg Glu Glu Ser Gln  
 980 985 990

Arg	Lys	Lys	Met	Gln	Glu	Ile	Asn	Asn	Gln	Lys	Ala	Asn	His	Lys	Ile
		995					1000					1005			
Glu	Glu	Leu	Glu	Lys	Ala	Lys	Gln	His	Leu	Glu	Gln	Glu	Ile	Tyr	
	1010					1015					1020				
Val	Asn	Lys	Lys	Arg	Leu	Glu	Met	Glu	Thr	Leu	Ala	Thr	Lys	Gln	
	1025					1030					1035				
Ala	Leu	Glu	Asp	His	Ser	Ile	Arg	His	Ala	Arg	Ile	Leu	Glu	Ala	
	1040					1045					1050				
Leu	Glu	Thr	Glu	Lys	Gln	Lys	Ile	Ala	Lys	Glu	Val	Gln	Ile	Leu	
	1055					1060					1065				
Gln	Gln	Asn	Arg	Asn	Asn	Arg	Asp	Lys	Thr	Phe	Thr	Val	Gln	Thr	
	1070					1075					1080				
Thr	Trp	Ser	Ser	Met	Lys	Leu	Ser	Met	Met	Ile	Gln	Glu	Ala	Asn	
	1085					1090					1095				
Ala	Ile	Ser	Ser	Lys	Leu	Lys	Thr	Tyr	Tyr	Val	Phe	Gly	Arg	His	
	1100					1105					1110				
Asp	Ile	Ser	Asp	Lys	Ser	Ser	Ser	Asp	Thr	Ser	Ile	Arg	Val	Arg	
	1115					1120					1125				
Asn	Leu	Lys	Leu	Gly	Ile	Ser	Thr	Phe	Trp	Ser	Leu	Glu	Lys	Phe	
	1130					1135					1140				
Glu	Ser	Lys	Leu	Ala	Ala	Met	Lys	Glu	Leu	Tyr	Glu	Ser	Asn	Gly	
	1145					1150					1155				
Ser	Asn	Arg	Gly	Glu	Asp	Ala	Phe	Cys	Asp	Pro	Glu	Asp	Glu	Trp	
	1160					1165					1170				
Glu	Pro	Asp	Ile	Thr	Asp	Ala	Pro	Val	Ser	Ser	Leu	Ser	Arg	Arg	
	1175					1180					1185				
Arg	Ser	Arg	Ser	Leu	Met	Lys	Asn	Arg	Arg	Ile	Ser	Gly	Cys	Leu	
	1190					1195					1200				

His 1205	Asp	Ile	Gln	Val	His	Pro 1210	Ile	Lys	Asn	Leu	His 1215	Ser	Ser	His
Ser 1220	Ser	Gly	Leu	Met	Asp	Lys 1225	Ser	Ser	Thr	Ile	Tyr 1230	Ser	Asn	Ser
Ala 1235	Glu	Ser	Phe	Leu	Pro	Gly 1240	Ile	Cys	Lys	Glu	Leu 1245	Ile	Gly	Ser
Ser 1250	Leu	Asp	Phe	Phe	Gly	Gln 1255	Ser	Tyr	Asp	Glu	Glu 1260	Arg	Thr	Ile
Ala 1265	Asp	Ser	Leu	Ile	Asn	Ser 1270	Phe	Leu	Lys	Ile	Tyr 1275	Asn	Gly	Leu
Phe 1280	Ala	Ile	Ser	Lys	Ala	His 1285	Glu	Glu	Gln	Asp	Glu 1290	Glu	Ser	Gln
Asp 1295	Asn	Leu	Phe	Ser	Ser	Asp 1300	Arg	Ala	Ile	Gln	Ser 1305	Leu	Thr	Ile
Gln 1310	Thr	Ala	Cys	Ala	Phe	Glu 1315	Gln	Leu	Val	Val	Leu 1320	Met	Lys	His
Trp 1325	Leu	Ser	Asp	Leu	Leu	Pro 1330	Cys	Thr	Asn	Ile	Ala 1335	Arg	Leu	Glu
Asp 1340	Glu	Leu	Arg	Gln	Glu	Val 1345	Lys	Lys	Leu	Gly	Gly 1350	Tyr	Leu	Gln
Leu 1355	Phe	Leu	Gln	Gly	Cys	Cys 1360	Leu	Asp	Ile	Ser	Ser 1365	Met	Ile	Lys
Glu 1370	Ala	Gln	Lys	Asn	Ala	Ile 1375	Gln	Ile	Val	Gln	Gln 1380	Ala	Val	Lys
Tyr 1385	Val	Gly	Gln	Leu	Ala	Val 1390	Leu	Lys	Gly	Ser	Lys 1395	Leu	His	Phe
Leu 1400	Glu	Asn	Gly	Asn	Asn	Lys 1405	Ala	Ala	Ser	Val	Gln 1410	Glu	Glu	Phe

Met Asp 1415	Ala Val Cys Asp Gly 1420	Val Gly Leu Gly Met Lys Ile Leu 1425
Leu Asp 1430	Ser Gly Leu Glu Lys 1435	Ala Lys Glu Leu Gln His Glu Leu 1440
Phe Arg 1445	Gln Cys Thr Lys Asn 1450	Glu Val Thr Lys Glu Met Lys Thr 1455
Asn Ala 1460	Met Gly Leu Ile Arg 1465	Ser Leu Glu Asn Ile Phe Ala Glu 1470
Ser Lys 1475	Ile Lys Ser Phe Arg 1480	Arg Gln Val Gln Glu Glu Asn Phe 1485
Glu Tyr 1490	Gln Asp Phe Lys Arg 1495	Met Val Asn Arg Ala Pro Glu Phe 1500
Leu Lys 1505	Leu Lys His Cys Leu 1510	Glu Lys Ala Ile Glu Ile Ile Ile 1515
Ser Ala 1520	Leu Lys Gly Cys His 1525	Ser Asp Ile Asn Leu Leu Gln Thr 1530
Cys Val 1535	Glu Ser Ile Arg Asn 1540	Leu Ala Ser Asp Phe Tyr Ser Asp 1545
Phe Ser 1550	Val Pro Ser Thr Ser 1555	Val Gly Ser Tyr Glu Ser Arg Val 1560
Thr His 1565	Ile Val His Gln Glu 1570	Leu Glu Ser Leu Ala Lys Ser Leu 1575
Leu Phe 1580	Cys Phe Glu Ser Glu 1585	Glu Ser Pro Asp Leu Leu Lys Pro 1590
Trp Glu 1595	Thr Tyr Asn Gln Asn 1600	Thr Lys Glu Glu His Gln Gln Ser 1605
Lys Ser 1610	Ser Gly Ile Asp Gly 1615	Ser Lys Asn Lys Gly Val Pro Lys 1620

Arg Val Tyr Glu Leu His Gly Ser Ser Pro Ala Val Ser Ser Glu  
 1625 1630 1635

Glu Cys Thr Pro Ser Arg Ile Gln Trp Val  
 1640 1645

<210> 39  
 <211> 2255  
 <212> DNA  
 <213> Homo sapiens

<400> 39  
 gcaggctctg cctgtggcca ctagcagaga agctgctgtc cttccaccac cagcaccgga 60  
 ccacctgctc caagaccagc ctcttggggg gaccaggcac ccggccttca ctggcaccca 120  
 gggagccgtc ctcagcagcg tcaacatgtc aaggcccagc agcagagcca ttactttgca 180  
 ccggaaggag tactcccaga acctcacctc agagcccacc ctctgcagc acaggggtgga 240  
 gcacttgatg acatgcaagc aggggagtc gagagtccag gggcccagg atgccttgca 300  
 gaagctgttc gagatggatg cacagggccg ggtgtggagc caagacttga tctgcaggt 360  
 cagggacggc tggtgcagc tgctggacat tgagaccaag gaggagctgg actcttaccg 420  
 cctagacagc atccaggcca tgaatgtggc gctcaacaca tgttcttaca actccatcct 480  
 gtccatcacc gtgcaggagc cgggcctgcc aggcactagc actctgctct tccagtgcc 540  
 ggaagtgggg gcagagcgac tgaagaccag cctgcagaag gctctggagg aagagctgga 600  
 gcaaagcaga cctcgacttg gaggccttca gccaggccag gacagatgga gggggcctgc 660  
 tatggaaagg ccgctcccta tggagcaggc acgctatctg gagccgggga tccctccaga 720  
 acagccccac cagaggaccc tagagcacag cctcccacca tccccaggc ccctgccacg 780  
 ccacaccagt gcccgagaac caagtgcctt tactctgcct cctccaaggc ggtcctcttc 840  
 ccccaggagc ccagagaggg acgaggaagt gctgaaccat gtcctaaggg acattgagct 900  
 gttcatggga aagctggaga agggccaggc aaagaccagc aggaagaaga aatttgggaa 960  
 aaaaaacaag gaccagggag gtctcaccca ggcacagtac attgactgct tccagaagat 1020  
 caagtacagc ttcaacctcc tgggaaggct ggccacctgg ctgaaggaga caagtcccc 1080  
 tgagctcgta cacatcctct tcaagtccct gaacttcata ctggccagggt gccctgaggc 1140  
 tggcctagca gcccaagtga tctacccct cctcaccct aaagctatca acctgctaca 1200  
 gtctgtcta agccacctg agagtaacct ttggatgggg ttgggccag cctggaccac 1260

```

tagccggggcc gactggacag gcgatgagcc cctgccctac caaccacat tctcgatga 1320
ctggcaactt ccagagccct ccagccaagc acccttagga taccaggacc ctgtttccct 1380
tcggcgggga agtcataggt tagggagcac ctacacttt cctcaggaga agacacacaa 1440
ccatgacct cagcctgggg accccaactc caggccctcc agcccaaac ctgccagcc 1500
agccctgaaa atgcaagtct tgtacgagtt tgaagctagg aaccacagg aactgactgt 1560
gggccaggga gagaagctgg aggttctgga ccacagcaag cgggtggtggc tggatgaaga 1620
tgaggcgga cggagcggct acattccaag caacatcctg gagcccctac agccggggac 1680
ccctgggacc cagggccagt caccctctcg ggttccaatg cttcgactta gctcaggcc 1740
tgaagaggtc acagactggc tgcaggcaga gaacttctcc actgccacgg tgaggacact 1800
tgggtccctg acggggagcc agctacttcg cataagacct ggggagctac agatgctatg 1860
tccacaggag gcccacgaa tcctgtcccg gctggaggct gtcagaagga tgctggggat 1920
aagcccttag gcaccagctt agacacctcc aagaaccagg ccccgctgat gcaagatggc 1980
agatctgata ccattagag ccccgagaat tcctctctcg gatcccagtt tgcagcaaac 2040
cccacacccc agctcacaca gaaaaacaa tggacaggcc cagagggtga agcaaacagt 2100
gtcccttctg gctgtgttgg agcctcccca gtaaccacct atttatattta cctctttccc 2160
aaacctggag catttatgcc taggcttgtc aagaatctgt tcagtcctc tccttctcaa 2220
taaaagcatc ttcaagcttg aaaaaaaaaa aaaaa 2255

```

<210> 40  
 <211> 594  
 <212> PRT  
 <213> Homo sapiens

<400> 40

```

Met Ser Arg Pro Ser Ser Arg Ala Ile Tyr Leu His Arg Lys Glu Tyr
1           5           10           15

```

```

Ser Gln Asn Leu Thr Ser Glu Pro Thr Leu Leu Gln His Arg Val Glu
          20           25           30

```

```

His Leu Met Thr Cys Lys Gln Gly Ser Gln Arg Val Gln Gly Pro Glu
          35           40           45

```

```

Asp Ala Leu Gln Lys Leu Phe Glu Met Asp Ala Gln Gly Arg Val Trp
          50           55           60

```



Ser Gln Asp Leu Ile Leu Gln Val Arg Asp Gly Trp Leu Gln Leu Leu  
 65 70 75 80

Asp Ile Glu Thr Lys Glu Glu Leu Asp Ser Tyr Arg Leu Asp Ser Ile  
 85 90 95

Gln Ala Met Asn Val Ala Leu Asn Thr Cys Ser Tyr Asn Ser Ile Leu  
 100 105 110

Ser Ile Thr Val Gln Glu Pro Gly Leu Pro Gly Thr Ser Thr Leu Leu  
 115 120 125

Phe Gln Cys Gln Glu Val Gly Ala Glu Arg Leu Lys Thr Ser Leu Gln  
 130 135 140

Lys Ala Leu Glu Glu Glu Leu Glu Gln Ser Arg Pro Arg Leu Gly Gly  
 145 150 155 160

Leu Gln Pro Gly Gln Asp Arg Trp Arg Gly Pro Ala Met Glu Arg Pro  
 165 170 175

Leu Pro Met Glu Gln Ala Arg Tyr Leu Glu Pro Gly Ile Pro Pro Glu  
 180 185 190

Gln Pro His Gln Arg Thr Leu Glu His Ser Leu Pro Pro Ser Pro Arg  
 195 200 205

Pro Leu Pro Arg His Thr Ser Ala Arg Glu Pro Ser Ala Phe Thr Leu  
 210 215 220

Pro Pro Pro Arg Arg Ser Ser Ser Pro Glu Asp Pro Glu Arg Asp Glu  
 225 230 235 240

Glu Val Leu Asn His Val Leu Arg Asp Ile Glu Leu Phe Met Gly Lys  
 245 250 255

Leu Glu Lys Ala Gln Ala Lys Thr Ser Arg Lys Lys Lys Phe Gly Lys  
 260 265 270

Lys Asn Lys Asp Gln Gly Gly Leu Thr Gln Ala Gln Tyr Ile Asp Cys  
 275 280 285

Phe Gln Lys Ile Lys Tyr Ser Phe Asn Leu Leu Gly Arg Leu Ala Thr  
 290 295 300

Trp Leu Lys Glu Thr Ser Ala Pro Glu Leu Val His Ile Leu Phe Lys  
 305 310 315 320

Ser Leu Asn Phe Ile Leu Ala Arg Cys Pro Glu Ala Gly Leu Ala Ala  
 325 330 335

Gln Val Ile Ser Pro Leu Leu Thr Pro Lys Ala Ile Asn Leu Leu Gln  
 340 345 350

Ser Cys Leu Ser Pro Pro Glu Ser Asn Leu Trp Met Gly Leu Gly Pro  
 355 360 365

Ala Trp Thr Thr Ser Arg Ala Asp Trp Thr Gly Asp Glu Pro Leu Pro  
 370 375 380

Tyr Gln Pro Thr Phe Ser Asp Asp Trp Gln Leu Pro Glu Pro Ser Ser  
 385 390 395 400

Gln Ala Pro Leu Gly Tyr Gln Asp Pro Val Ser Leu Arg Arg Gly Ser  
 405 410 415

His Arg Leu Gly Ser Thr Ser His Phe Pro Gln Glu Lys Thr His Asn  
 420 425 430

His Asp Pro Gln Pro Gly Asp Pro Asn Ser Arg Pro Ser Ser Pro Lys  
 435 440 445

Pro Ala Gln Pro Ala Leu Lys Met Gln Val Leu Tyr Glu Phe Glu Ala  
 450 455 460

Arg Asn Pro Arg Glu Leu Thr Val Val Gln Gly Glu Lys Leu Glu Val  
 465 470 475 480

Leu Asp His Ser Lys Arg Trp Trp Leu Val Lys Asn Glu Ala Gly Arg  
 485 490 495

Ser Gly Tyr Ile Pro Ser Asn Ile Leu Glu Pro Leu Gln Pro Gly Thr  
 500 505 510

Pro Gly Thr Gln Gly Gln Ser Pro Ser Arg Val Pro Met Leu Arg Leu  
515 520 525

Ser Ser Arg Pro Glu Glu Val Thr Asp Trp Leu Gln Ala Glu Asn Phe  
530 535 540

Ser Thr Ala Thr Val Arg Thr Leu Gly Ser Leu Thr Gly Ser Gln Leu  
545 550 555 560

Leu Arg Ile Arg Pro Gly Glu Leu Gln Met Leu Cys Pro Gln Glu Ala  
565 570 575

Pro Arg Ile Leu Ser Arg Leu Glu Ala Val Arg Arg Met Leu Gly Ile  
580 585 590

Ser Pro

<210> 41  
<211> 3600  
<212> DNA  
<213> Homo sapiens

<400> 41  
gaatcaacag aatttgtctt tttgtgactg gtttatttca cttaacttca tcctcaagggt 60  
tcaacttaaa ggtgtatcca tgttgtagca cgtgtcagca ttttctttcg ttctcaggct 120  
aaatagtatt tcattgtgtg tgtacaccat gtttcatgca ttcattcatc ccttgaaaga 180  
ttggtgggtt gtttcctcct ttttgctttt gtgaacagtg ctacgaacat ggttgtacaa 240  
acatctcttg gagccccact agcagttcct ttgggtatat accccaaagt ggaattgctg 300  
gatctggtag ctcccttttt aattttttga ggaatcgcca cacagtttcc ataacagctg 360  
caccatttta cattccaag accttttttt tttttttttt ttttaagaaga aaagatgtgt 420  
ttctgcattt ctggaagtct atgctgcatt tccatttggt gaaatttaag accagagtca 480  
tcttttctgc tgtaattata atggtcactg gcttgtgcct tttcctcctc tctctgcccc 540  
atctgcacgg ggtctttgaa caagtcccag caccttggtg gacaagcctg tgtccctggc 600  
ccatcatgga agccgctgcc ttccagagtg ggagtctgta ccctgttgcc tcattccttg 660  
ctgcgccccat gagtgagctt gtgcctgacc tctccttcca ggtggactta cacactgggc 720  
tgtcggagtt ctcggtgacg cagcgccggc tggcccatgg ctggaatgag tttgttgctg 780

acaacagcga	acctgtgtgg	aagaaatacc	tggatcagtt	taagaacccc	ctgatcctgc	840
tgctgctggg	ctctgccctg	gtgagtgtcc	tcaccaagga	gtatgaggac	gccgtcagca	900
tcgccacggc	agtgtttgtc	gtggtcactg	tcgccttcat	ccaggagtac	aggtcggaga	960
aatctctgga	agagctgacc	aagctggttc	ctccagaatg	taactgccta	agagaaggaa	1020
aactccagca	cctgcttgct	cgagaactgg	ttcctggtga	tgtcgtatct	ctctcgatcg	1080
gagaccggat	ccctgcagac	atccgactca	ctgaggtcac	ggacctcttg	gtggatgaat	1140
ccagtttcac	cggggaagcc	gagccatgta	gtaaaacaga	cagccccttg	acaggcgggtg	1200
gggacctcac	caccctcagc	aacatcgtct	tcatggggac	cctggtgcag	tatgggaggg	1260
gccagggggg	cgtgattgga	acaggggaaa	gctctcagtt	cggagaagtg	tttaagatga	1320
tgcaggctga	agagacacct	aaaactcctt	tgcagaaaag	catggacagg	ctaggaaagc	1380
aactgacact	cttctccttt	ggcataatcg	gtctcatcat	gctcattggc	tggtcgcaag	1440
ggaaaacaact	cctgagtatg	ttcacgatcg	gggtcagcct	ggctgtggcg	gctattccag	1500
agggctctgcc	catcgctcgtc	atgggtgacgc	tggtcctggg	agtgtctcgg	atggccaaga	1560
agcgggtcat	cgtgaagaag	ttacccatcg	tggagacttt	aggttgctgc	agcgttctct	1620
gttctgacaa	gacggggact	ctgactgcca	atgaaatgac	agtgaccag	cttgtaacgt	1680
cagatgggct	tcgtgccgag	gtcagcggag	ttgggtatga	cggtaaggag	actgtgtgtc	1740
ttctaccatc	caagggaagtc	attaaggaat	tttccaatgt	ctcagtggga	aagttagtgg	1800
aggcgggctg	tgttgccaac	aatgcggtca	tcagaaagaa	cgccgtgatg	gggcagccca	1860
ccgaggggtc	attgatggcc	ctggcgatga	agatggactt	aagtgatatt	aaaaattcat	1920
atataagaaa	aaaagagatt	ccattcagtt	cagagcagaa	gtggatggcg	gtgaaatgca	1980
gtctgaagac	tgaggatcag	gaagacattt	acttcatgaa	aggggccttg	gaagagggtga	2040
tccgctactg	caccatgtac	aacaacgggg	gcatccccct	gccgctgacg	ccccagcaga	2100
ggtcatttctg	cctgcaggaa	gagaagagga	tggggtcgct	cggtttgcg	gtgctggccc	2160
tggcttctgg	gcccagagctg	gggcggctga	cgtttctagg	tcttgtgggc	atcattgacc	2220
ccccgagagt	tggcgtgaag	gaagcagtc	aggttctctc	cgagtctgg	gtgtctgtga	2280
agatgataac	gggggatgcc	ctggagacgg	ccttggccat	aggaagaaac	atcggcctgt	2340
gcaacgggaa	gctgcaagcc	atgtccgggg	aggaggtgga	cagcgtggag	aagggcgagc	2400
tggccgaccg	cgtggggaag	gtgtccgtgt	tcttcaggac	cagcccaaag	cacaagctca	2460

```

aaatcatcaa ggctctgcag gagtcagggg cgatcgtggc catgactggg gatgggggtga 2520
acgacgcagt ggcctgaag tctgcagaca ttgggatcgc catggggcag acagggacgg 2580
acgtcagcaa agaggccgcc aacatgatcc tggtgatga tgactttctca gccatcatga 2640
atgcagtgga ggaaggcaag ggtatTTTTT acaacatcaa aaactttgtc cgattccagc 2700
tgagcacgag catctccgcc ctgagtctca tcaactgtgc caccgtgttc aacctgcccc 2760
gccccctcaa cgccatgcag atcctatgga tcaacatcat catggatggg ccaccggcgc 2820
agagcttggg ggtagagccc gttgacaaag acgccttcag gcagccacca cggagtgtgc 2880
gggacaccat cctcagcaga gccctcatcc tgaagatcct catgtccgcg gccatcatca 2940
tcagcgggac cctctttatc ttctggaagg agatgcctga agacagagca agcactcccc 3000
gcaccacgac gatgacgttc acttgTTTTT tgtttttcga tctcttcaac gccttgacct 3060
gccgctctca gaccaagctg atatttgaga tcggctttct caggaaccac atgttcctct 3120
actccgtcct ggggtccatc ctggggcagc tggcggtcac ttacatcccc ccgctgcaga 3180
gggtcttcca gacggagaac ctgggagcgc ttgatttgct gtttttaact ggattggcct 3240
catccgtctt catTTTgtca gagctcctca aactatgtga aaaatactgt tgcagcccca 3300
agagagtcca gatgcaccct gaagatgtgt agtggaccgc actccgcggc accttcccta 3360
atcatctcga tctggttggt actgtggccc ctgcgtgtgc tcctcgtcag gggagacttt 3420
taggaggccg cagccttcca tcaccgatc agtttttccct cttaggaaag ctgcaggaac 3480
ctcgtgggct ccagggaccc aggccacat ccatccagcg ttcccgctgg ctgtgggaca 3540
gacagggagg ggcctgtaca gaaacaccac actgtttatt aaatcacaat gatttttatt 3600

```

<210> 42  
 <211> 963  
 <212> PRT  
 <213> Homo sapiens

<400> 42

```

Met Leu His Phe His Leu Leu Lys Phe Lys Thr Arg Val Ile Phe Ser
1           5           10          15

```

```

Ala Val Ile Ile Met Val Thr Gly Leu Cys Leu Phe Leu Leu Ser Leu
          20           25          30

```

```

Pro His Leu His Gly Val Phe Glu Gln Val Pro Ala Pro Trp Trp Thr
          35           40          45

```

Ser Leu Cys Pro Trp Pro Ile Met Glu Ala Ala Ala Phe Gln Ser Gly  
 50 55 60

Ser Leu Tyr Pro Val Ala Ser Phe Leu Ala Ala Pro Met Ser Glu Leu  
 65 70 75 80

Val Pro Asp Leu Ser Phe Gln Val Asp Leu His Thr Gly Leu Ser Glu  
 85 90 95

Phe Ser Val Thr Gln Arg Arg Leu Ala His Gly Trp Asn Glu Phe Val  
 100 105 110

Ala Asp Asn Ser Glu Pro Val Trp Lys Lys Tyr Leu Asp Gln Phe Lys  
 115 120 125

Asn Pro Leu Ile Leu Leu Leu Leu Gly Ser Ala Leu Val Ser Val Leu  
 130 135 140

Thr Lys Glu Tyr Glu Asp Ala Val Ser Ile Ala Thr Ala Val Leu Val  
 145 150 155 160

Val Val Thr Val Ala Phe Ile Gln Glu Tyr Arg Ser Glu Lys Ser Leu  
 165 170 175

Glu Glu Leu Thr Lys Leu Val Pro Pro Glu Cys Asn Cys Leu Arg Glu  
 180 185 190

Gly Lys Leu Gln His Leu Leu Ala Arg Glu Leu Val Pro Gly Asp Val  
 195 200 205

Val Ser Leu Ser Ile Gly Asp Arg Ile Pro Ala Asp Ile Arg Leu Thr  
 210 215 220

Glu Val Thr Asp Leu Leu Val Asp Glu Ser Ser Phe Thr Gly Glu Ala  
 225 230 235 240

Glu Pro Cys Ser Lys Thr Asp Ser Pro Leu Thr Gly Gly Gly Asp Leu  
 245 250 255

Thr Thr Leu Ser Asn Ile Val Phe Met Gly Thr Leu Val Gln Tyr Gly  
 260 265 270

Arg Gly Gln Gly Val Val Ile Gly Thr Gly Glu Ser Ser Gln Phe Gly  
 275 280 285

Glu Val Phe Lys Met Met Gln Ala Glu Glu Thr Pro Lys Thr Pro Leu  
 290 295 300

Gln Lys Ser Met Asp Arg Leu Gly Lys Gln Leu Thr Leu Phe Ser Phe  
 305 310 315 320

Gly Ile Ile Gly Leu Ile Met Leu Ile Gly Trp Ser Gln Gly Lys Gln  
 325 330 335

Leu Leu Ser Met Phe Thr Ile Gly Val Ser Leu Ala Val Ala Ala Ile  
 340 345 350

Pro Glu Gly Leu Pro Ile Val Val Met Val Thr Leu Val Leu Gly Val  
 355 360 365

Leu Arg Met Ala Lys Lys Arg Val Ile Val Lys Lys Leu Pro Ile Val  
 370 375 380

Glu Thr Leu Gly Cys Cys Ser Val Leu Cys Ser Asp Lys Thr Gly Thr  
 385 390 395 400

Leu Thr Ala Asn Glu Met Thr Val Thr Gln Leu Val Thr Ser Asp Gly  
 405 410 415

Leu Arg Ala Glu Val Ser Gly Val Gly Tyr Asp Gly Gln Gly Thr Val  
 420 425 430

Cys Leu Leu Pro Ser Lys Glu Val Ile Lys Glu Phe Ser Asn Val Ser  
 435 440 445

Val Gly Lys Leu Val Glu Ala Gly Cys Val Ala Asn Asn Ala Val Ile  
 450 455 460

Arg Lys Asn Ala Val Met Gly Gln Pro Thr Glu Gly Ala Leu Met Ala  
 465 470 475 480

Leu Ala Met Lys Met Asp Leu Ser Asp Ile Lys Asn Ser Tyr Ile Arg  
 485 490 495

Lys Lys Glu Ile Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys  
 500 505 510

Cys Ser Leu Lys Thr Glu Asp Gln Glu Asp Ile Tyr Phe Met Lys Gly  
 515 520 525

Ala Leu Glu Glu Val Ile Arg Tyr Cys Thr Met Tyr Asn Asn Gly Gly  
 530 535 540

Ile Pro Leu Pro Leu Thr Pro Gln Gln Arg Ser Phe Cys Leu Gln Glu  
 545 550 555 560

Glu Lys Arg Met Gly Ser Leu Gly Leu Arg Val Leu Ala Leu Ala Ser  
 565 570 575

Gly Pro Glu Leu Gly Arg Leu Thr Phe Leu Gly Leu Val Gly Ile Ile  
 580 585 590

Asp Pro Pro Arg Val Gly Val Lys Glu Ala Val Gln Val Leu Ser Glu  
 595 600 605

Ser Gly Val Ser Val Lys Met Ile Thr Gly Asp Ala Leu Glu Thr Ala  
 610 615 620

Leu Ala Ile Gly Arg Asn Ile Gly Leu Cys Asn Gly Lys Leu Gln Ala  
 625 630 635 640

Met Ser Gly Glu Glu Val Asp Ser Val Glu Lys Gly Glu Leu Ala Asp  
 645 650 655

Arg Val Gly Lys Val Ser Val Phe Phe Arg Thr Ser Pro Lys His Lys  
 660 665 670

Leu Lys Ile Ile Lys Ala Leu Gln Glu Ser Gly Ala Ile Val Ala Met  
 675 680 685

Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ser Ala Asp Ile  
 690 695 700

Gly Ile Ala Met Gly Gln Thr Gly Thr Asp Val Ser Lys Glu Ala Ala  
 705 710 715 720



Asn Met Ile Leu Val Asp Asp Asp Phe Ser Ala Ile Met Asn Ala Val  
725 730 735

Glu Glu Gly Lys Gly Ile Phe Tyr Asn Ile Lys Asn Phe Val Arg Phe  
740 745 750

Gln Leu Ser Thr Ser Ile Ser Ala Leu Ser Leu Ile Thr Leu Ser Thr  
755 760 765

Val Phe Asn Leu Pro Ser Pro Leu Asn Ala Met Gln Ile Leu Trp Ile  
770 775 780

Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu Pro  
785 790 795 800

Val Asp Lys Asp Ala Phe Arg Gln Pro Pro Arg Ser Val Arg Asp Thr  
805 810 815

Ile Leu Ser Arg Ala Leu Ile Leu Lys Ile Leu Met Ser Ala Ala Ile  
820 825 830

Ile Ile Ser Gly Thr Leu Phe Ile Phe Trp Lys Glu Met Pro Glu Asp  
835 840 845

Arg Ala Ser Thr Pro Arg Thr Thr Thr Met Thr Phe Thr Cys Phe Val  
850 855 860

Phe Phe Asp Leu Phe Asn Ala Leu Thr Cys Arg Ser Gln Thr Lys Leu  
865 870 875 880

Ile Phe Glu Ile Gly Phe Leu Arg Asn His Met Phe Leu Tyr Ser Val  
885 890 895

Leu Gly Ser Ile Leu Gly Gln Leu Ala Val Ile Tyr Ile Pro Pro Leu  
900 905 910

Gln Arg Val Phe Gln Thr Glu Asn Leu Gly Ala Leu Asp Leu Leu Phe  
915 920 925

Leu Thr Gly Leu Ala Ser Ser Val Phe Ile Leu Ser Glu Leu Leu Lys  
930 935 940

Leu Cys Glu Lys Tyr Cys Cys Ser Pro Lys Arg Val Gln Met His Pro  
 945 950 955 960

Glu Asp Val

<210> 43  
 <211> 2076  
 <212> DNA  
 <213> Homo sapiens

<400> 43  
 ggcacgaggg ggaaaccgac tcctgggagc agggaggaac gcgcgctcca gagacaactt 60  
 cgcggtgtgg tgaactctct gaggaaaaac acgtgcgtgg caacaagtga ctgagaccta 120  
 gaaatccaag cgttggagggt cctgaggcca gcctaagtgc cttcaaaatg gaacgaaggc 180  
 gtttgtgggg ttccattcag agccgataca tcagcatgag tgtgtggaca agcccacgga 240  
 gacttgtgga gctggcaggg cagagcctgc tgaaggatga ggccctggcc attgccgccc 300  
 tggagttgct gcccaggag ctcttccgc cactcttcat ggcagccttt gacgggagac 360  
 acagccagac cctgaaggca atggtgcagg cctggccctt cacctgcctc cctctgggag 420  
 tgctgatgaa gggacaacat cttcacctgg agaccttcaa agctgtgctt gatggacttg 480  
 atgtgctcct tgcccaggag gttcgcccca ggaggtggaa acttcaagtg ctggatttac 540  
 ggaagaactc tcatcaggac ttctggactg tatggtctgg aaacagggcc agtctgtact 600  
 catttccaga gccagaagca gctcagcca tgacaaagaa gcgaaaagta gatggtttga 660  
 gcacagaggg agagcagccc ttcatccag tagaggtgct cgtagacctg ttctcaagg 720  
 aaggtgcctg tgatgaattg ttctcctacc tcattgagaa agtgaagcga aagaaaaatg 780  
 tactacgcct gtgctgtaag aagctgaaga tttttgcaat gcccatgcag gatatacaaga 840  
 tgatcctgaa aatggtgcag ctggactcta ttgaagattt ggaagtgact tgtacctgga 900  
 agctaccac cttggcgaaa ttttctcctt acctgggcca gatgattaat ctgcgtagac 960  
 tcctcctctc ccacatccat gcatcttctt acatttcccc ggagaaggaa gagcagtata 1020  
 tcgcccagtt cacctctcag ttctcagtc tcagtgctt gcaggctctc tatgtggact 1080  
 ctttatTTTT ccttagaggc cgctggatc agttgctcag gcacgtgatg aacccttgg 1140  
 aaaccctctc aataactaac tgccggcttt cggaagggga tgtgatgcat ctgtcccaga 1200  
 gtcccagcgt cagtcagcta agtgctctga gtctaagtgg ggtcatgctg accgatgtaa 1260

```

gtcccgagcc cctccaagct ctgctggaga ggcctctgc caccctccag gacctggtct 1320
ttgatgagtg tgggatcacg gatgatcagc tccttgccct cctgccttcc ctgagccact 1380
gctcccagct tacaacctta agcttctacg ggaattccat ctccatatct gccttgccaga 1440
gtctcctgca gcacctcatc gggctgagca atctgacca cgtgctgtat cctgtccccc 1500
tggagagtta tgaggacatc catggtaccc tccacctgga gaggcttgcc tatctgcatg 1560
ccaggctcag ggagttgctg tgtgagttgg ggcggcccag catggtctgg cttagtgcc 1620
accctgtcc tcaactgtgg gacagaacct tctatgacct ggagcccatc ctgtgccct 1680
gtttcatgcc taactagctg ggtgcacata tcaaagtctt cattctgcat acttgacac 1740
taaagccagg atgtgcatgc atcttgaagc acaaagcag ccacagtttc agacaaatgt 1800
tcagtgtgag tgaggaaaac atgttcagtg aggaaaaaac attcagacaa atgttcagtg 1860
aggaaaaaaa ggggaagttg gggataggca gatgttgact tgaggagtta atgtgatctt 1920
tgaggagata catcttatag agttagaat agaactctgaa tttctaaagg gagattctgg 1980
cttggaagt acatgtagga gttaatccct gtgtagactg ttgtaaagaa actgttgaaa 2040
ataaagagaa gcaatgtgaa aaaaaaaaaa aaaaaa 2076

```

```

<210> 44
<211> 509
<212> PRT
<213> Homo sapiens

```

```

<400> 44

```

```

Met Glu Arg Arg Arg Leu Trp Gly Ser Ile Gln Ser Arg Tyr Ile Ser
1           5           10          15

```

```

Met Ser Val Trp Thr Ser Pro Arg Arg Leu Val Glu Leu Ala Gly Gln
20          25          30

```

```

Ser Leu Leu Lys Asp Glu Ala Leu Ala Ile Ala Ala Leu Glu Leu Leu
35          40          45

```

```

Pro Arg Glu Leu Phe Pro Pro Leu Phe Met Ala Ala Phe Asp Gly Arg
50          55          60

```

```

His Ser Gln Thr Leu Lys Ala Met Val Gln Ala Trp Pro Phe Thr Cys
65          70          75          80

```

Leu Pro Leu Gly Val Leu Met Lys Gly Gln His Leu His Leu Glu Thr  
85 90 95

Phe Lys Ala Val Leu Asp Gly Leu Asp Val Leu Leu Ala Gln Glu Val  
100 105 110

Arg Pro Arg Arg Trp Lys Leu Gln Val Leu Asp Leu Arg Lys Asn Ser  
115 120 125

His Gln Asp Phe Trp Thr Val Trp Ser Gly Asn Arg Ala Ser Leu Tyr  
130 135 140

Ser Phe Pro Glu Pro Glu Ala Ala Gln Pro Met Thr Lys Lys Arg Lys  
145 150 155 160

Val Asp Gly Leu Ser Thr Glu Ala Glu Gln Pro Phe Ile Pro Val Glu  
165 170 175

Val Leu Val Asp Leu Phe Leu Lys Glu Gly Ala Cys Asp Glu Leu Phe  
180 185 190

Ser Tyr Leu Ile Glu Lys Val Lys Arg Lys Lys Asn Val Leu Arg Leu  
195 200 205

Cys Cys Lys Lys Leu Lys Ile Phe Ala Met Pro Met Gln Asp Ile Lys  
210 215 220

Met Ile Leu Lys Met Val Gln Leu Asp Ser Ile Glu Asp Leu Glu Val  
225 230 235 240

Thr Cys Thr Trp Lys Leu Pro Thr Leu Ala Lys Phe Ser Pro Tyr Leu  
245 250 255

Gly Gln Met Ile Asn Leu Arg Arg Leu Leu Leu Ser His Ile His Ala  
260 265 270

Ser Ser Tyr Ile Ser Pro Glu Lys Glu Glu Gln Tyr Ile Ala Gln Phe  
275 280 285

Thr Ser Gln Phe Leu Ser Leu Gln Cys Leu Gln Ala Leu Tyr Val Asp  
290 295 300

Ser Leu Phe Phe Leu Arg Gly Arg Leu Asp Gln Leu Leu Arg His Val  
 305 310 315 320

Met Asn Pro Leu Glu Thr Leu Ser Ile Thr Asn Cys Arg Leu Ser Glu  
 325 330 335

Gly Asp Val Met His Leu Ser Gln Ser Pro Ser Val Ser Gln Leu Ser  
 340 345 350

Val Leu Ser Leu Ser Gly Val Met Leu Thr Asp Val Ser Pro Glu Pro  
 355 360 365

Leu Gln Ala Leu Leu Glu Arg Ala Ser Ala Thr Leu Gln Asp Leu Val  
 370 375 380

Phe Asp Glu Cys Gly Ile Thr Asp Asp Gln Leu Leu Ala Leu Leu Pro  
 385 390 395 400

Ser Leu Ser His Cys Ser Gln Leu Thr Thr Leu Ser Phe Tyr Gly Asn  
 405 410 415

Ser Ile Ser Ile Ser Ala Leu Gln Ser Leu Leu Gln His Leu Ile Gly  
 420 425 430

Leu Ser Asn Leu Thr His Val Leu Tyr Pro Val Pro Leu Glu Ser Tyr  
 435 440 445

Glu Asp Ile His Gly Thr Leu His Leu Glu Arg Leu Ala Tyr Leu His  
 450 455 460

Ala Arg Leu Arg Glu Leu Leu Cys Glu Leu Gly Arg Pro Ser Met Val  
 465 470 475 480

Trp Leu Ser Ala Asn Pro Cys Pro His Cys Gly Asp Arg Thr Phe Tyr  
 485 490 495

Asp Pro Glu Pro Ile Leu Cys Pro Cys Phe Met Pro Asn  
 500 505

<210> 45  
 <211> 1445  
 <212> DNA  
 <213> Homo sapiens

<400> 45  
 gcgggggagcc ggccccgagc gcagtttcca gtgggggccgg ggtttcaccc gggccctctc 60  
 tgtttgaacc gaaccgaca aatgggcgca tgacgatgga gagcaggga atggactgct 120  
 atctccgtcg cctcaaacag gagctgatgt ccatgaagga ggtgggtgat ggcttacagg 180  
 atcagatgaa ctgcatgatg ggtgcactgc aagaactgaa gctcctccag gtgcagacag 240  
 cactggaaca gctggagatc tctggagggg gtccctgtgcc aggagccct gaagggtccca 300  
 ggacccagtg cgagcaccct tgttgggagg gtggcagagg tcctgccagg cccacagtct 360  
 gtccccctc cagtcaacct tctcttgcca gcagcaccaa gtttccatcc cataggagtg 420  
 tctgtggaag ggatttagcc cccttgccca ggacacagcc acatcaaagc tgtgctcagc 480  
 aggggccaga gcgagtggaa cgggatgact ggacctccac gttgatgtcc cggggccgga 540  
 atcgacagcc tctggtgtta ggggacaacg tttttgcaga cctggtgggc aattggctag 600  
 acttgccaga actggagaag ggtggggaga agggtgagac tgggggggca cgtgaaccca 660  
 aaggagagaa aggccagccc caggagctgg gccgcagggt cgccctgaca gcaaacatct 720  
 ttaagaagtt cttgcgtagt gtgcggcctg accgtgaccg gctgctgaag gagaagccag 780  
 gctgggtgac acccatggtc cctgagtccc gaaccggccg ctcacagaag gtcaagaagc 840  
 ggagcctttc caagggtctt ggacatttcc ccttccagg caccggggag cacaggcgag 900  
 gggagaatcc cccacaagc tgccccaagg ccctggagca ctcacctca ggatttgata 960  
 ttaacacagc tgtttgggtc tgaatcctag agacagaaag ttgactgagc ctgaaagggc 1020  
 cagggtcccag tgctgggccc ctggggagga gggaggggtg gcggtatggc tctcgaaagc 1080  
 ccaactccaa gttcctttcc ccagaaagc ggggagaagc cagagttctt ggctcaggac 1140  
 tgaagggaag gtggttggga gaggtgtctt tgggggctag ctggtggagg aggtgaagagt 1200  
 agctggagag tgagctgtgc gtgtgtgtgt gtgtgtgtgc atgtgtgtgt ctgtctggca 1260  
 tgcatgcact cactttgggg ctggaggtga cagtaggtga gggcagagga ggagatcaga 1320  
 aaatccctct gacatctcca ctgccccaa agacctccgt tgaacattct gtatggaaaa 1380  
 gagccctgga gcacaggtt cccagatag gcccccaat aaagacctgt ctatggctct 1440  
 ccaa 1445

<210> 46  
 <211> 297  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 46

```

Met Thr Met Glu Ser Arg Glu Met Asp Cys Tyr Leu Arg Arg Leu Lys
1          5          10          15

Gln Glu Leu Met Ser Met Lys Glu Val Gly Asp Gly Leu Gln Asp Gln
          20          25          30

Met Asn Cys Met Met Gly Ala Leu Gln Glu Leu Lys Leu Leu Gln Val
          35          40          45

Gln Thr Ala Leu Glu Gln Leu Glu Ile Ser Gly Gly Gly Pro Val Pro
          50          55          60

Gly Ser Pro Glu Gly Pro Arg Thr Gln Cys Glu His Pro Cys Trp Glu
65          70          75          80

Gly Gly Arg Gly Pro Ala Arg Pro Thr Val Cys Ser Pro Ser Ser Gln
          85          90          95

Pro Ser Leu Gly Ser Ser Thr Lys Phe Pro Ser His Arg Ser Val Cys
          100          105          110

Gly Arg Asp Leu Ala Pro Leu Pro Arg Thr Gln Pro His Gln Ser Cys
          115          120          125

Ala Gln Gln Gly Pro Glu Arg Val Glu Pro Asp Asp Trp Thr Ser Thr
          130          135          140

Leu Met Ser Arg Gly Arg Asn Arg Gln Pro Leu Val Leu Gly Asp Asn
145          150          155          160

Val Phe Ala Asp Leu Val Gly Asn Trp Leu Asp Leu Pro Glu Leu Glu
          165          170          175

Lys Gly Gly Glu Lys Gly Glu Thr Gly Gly Ala Arg Glu Pro Lys Gly
          180          185          190

Glu Lys Gly Gln Pro Gln Glu Leu Gly Arg Arg Phe Ala Leu Thr Ala
          195          200          205

Asn Ile Phe Lys Lys Phe Leu Arg Ser Val Arg Pro Asp Arg Asp Arg
210          215          220

```

Leu Leu Lys Glu Lys Pro Gly Trp Val Thr Pro Met Val Pro Glu Ser  
225 230 235 240

Arg Thr Gly Arg Ser Gln Lys Val Lys Lys Arg Ser Leu Ser Lys Gly  
245 250 255

Ser Gly His Phe Pro Phe Pro Gly Thr Gly Glu His Arg Arg Gly Glu  
260 265 270

Asn Pro Pro Thr Ser Cys Pro Lys Ala Leu Glu His Ser Pro Ser Gly  
275 280 285

Phe Asp Ile Asn Thr Ala Val Trp Val  
290 295

<210> 47  
<211> 1919  
<212> DNA  
<213> Homo sapiens

<400> 47  
ggagctcccc gcatactgca gtgcattgcc caggagaaag tgatccctgc acttgccctgt 60  
ctgggacaag ggaaggggcc aaacaaaaca cccgtggctg ccatctgcct gaccagcttg 120  
gtgaccatgg cctttgtttt tgtgggtcaa gtgaacgttc tggcccccat cgtcaccatc 180  
aacttcatgc tgacatacgt tgcagtggac tactcttact tctccctgtc catgtgttcc 240  
tgcagcctga ccccggtgcc tgagccggtg ctcagggagg gcgcagaagg cctccactgc 300  
tctgagcacc tgctcttaga gaaagctccc agttacggct ctgagggacc tgcccaaaga 360  
gtcttggagg gcacgctact ggaattcacc aaggacatgg atcagctcct ccagctaacc 420  
aggaagcttg agagtagcca gcccaggcaa ggagagggtg acaggacccc agaaagtcag 480  
aagaggaaaa gcaagaaggc caccaagcag accctacaag atagcttcct cttggacctc 540  
aaatcccctc cttctttccc tgtcgagatc tctgacaggt tgcccgtgc ctctgggag 600  
gggcaggagt cctgctggaa caagcagact tccaagagcg aagggactca gcctgaggga 660  
acatatggag agcaacttgt tcctgagctg tgcaaccaat cagagtccag tggagaagat 720  
ttcttcctga agtccaggct ccaagaacaa gatgtctgga gaagatccac ttctttctat 780  
accacatgt gcaaccctg ggtctccctg ttgggggctg ttgggtccct tctcatcatg 840  
tttgtgatac agtgggtgta taccctggtt aacatgggtg ttgctgccat cgtgtatttc 900



tacattggcc gggccagtcc agggcttcac cttggatcag cctccaactt cagctttttc 960  
 cgggtgatga ggtctctctt gctccctcc tgcaggagct tgcagtcccc ccaggagcag 1020  
 atcatcttgg cgccgtccct ggctaagggt gacatggaga tgactcagct caccaggag 1080  
 aatgcagact tcgccactcg ggatcgctac caccactcct ccctcgtgaa ccgggagcag 1140  
 ctgatgcctc actactagat gcagtgtggt gaccttctc ttttggagct gtcccatgta 1200  
 cagtggaccc aagcccagga ccttcgtgga gctgcttctc caacctgaga aactcaagac 1260  
 ccacctccc gctgtcactt tggacaatgg aaatctacat tttcttttcc cttttttttt 1320  
 ttttttgaga cagagtctcg ccttgtcacc caggctggag tccagtggca caatcttggc 1380  
 tcactgcaac ctctgcttcc cgagttcaag caattctcct gcctcagcct cctgagtagc 1440  
 tgggattata ggcatgcacc accacacca gctatttttt gtattttttac tggagacagg 1500  
 gtttcaccat gttggccagg ctggtctcga actcctgacc tcgtgatcca ccgctctcag 1560  
 cctcccaaag tactgggatt acaggcgtga gccacatgc ctggccagaa atctatgttt 1620  
 tcttagaaca tgtggaagaa ggaaaaagac aaaaaaggaa gtctggattc tgaggaccac 1680  
 gtctcaccca ggtgacatc aggaatggtg ctagcctctg caacacgaca ccagctctga 1740  
 agagctctat acaggtacta agactagcag gggacaccaa gactctgcac aaccagattg 1800  
 cttgtgcaga gggccacaat aagtgtatgt tttatatattt attgtattat ttattcaaaa 1860  
 ataaataata cactcacatg tttccacacc caaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1919

<210> 48  
 <211> 308  
 <212> PRT  
 <213> Homo sapiens

<400> 48

Met Cys Ser Cys Ser Leu Thr Pro Val Pro Glu Pro Val Leu Arg Glu  
 1 5 10 15

Gly Ala Glu Gly Leu His Cys Ser Glu His Leu Leu Leu Glu Lys Ala  
 20 25 30

Pro Ser Tyr Gly Ser Glu Gly Pro Ala Gln Arg Val Leu Glu Gly Thr  
 35 40 45

Leu Leu Glu Phe Thr Lys Asp Met Asp Gln Leu Leu Gln Leu Thr Arg  
 50 55 60

Lys Leu Glu Ser Ser Gln Pro Arg Gln Gly Glu Gly Asn Arg Thr Pro  
 65 70 75 80  
 Glu Ser Gln Lys Arg Lys Ser Lys Lys Ala Thr Lys Gln Thr Leu Gln  
 85 90 95  
 Asp Ser Phe Leu Leu Asp Leu Lys Ser Pro Pro Ser Phe Pro Val Glu  
 100 105 110  
 Ile Ser Asp Arg Leu Pro Ala Ala Ser Trp Glu Gly Gln Glu Ser Cys  
 115 120 125  
 Trp Asn Lys Gln Thr Ser Lys Ser Glu Gly Thr Gln Pro Glu Gly Thr  
 130 135 140  
 Tyr Gly Glu Gln Leu Val Pro Glu Leu Cys Asn Gln Ser Glu Ser Ser  
 145 150 155 160  
 Gly Glu Asp Phe Phe Leu Lys Ser Arg Leu Gln Glu Gln Asp Val Trp  
 165 170 175  
 Arg Arg Ser Thr Ser Phe Tyr Thr His Met Cys Asn Pro Trp Val Ser  
 180 185 190  
 Leu Leu Gly Ala Val Gly Ser Leu Leu Ile Met Phe Val Ile Gln Trp  
 195 200 205  
 Val Tyr Thr Leu Val Asn Met Gly Val Ala Ala Ile Val Tyr Phe Tyr  
 210 215 220  
 Ile Gly Arg Ala Ser Pro Gly Leu His Leu Gly Ser Ala Ser Asn Phe  
 225 230 235 240  
 Ser Phe Phe Arg Trp Met Arg Ser Leu Leu Leu Pro Ser Cys Arg Ser  
 245 250 255  
 Leu Gln Ser Pro Gln Glu Gln Ile Ile Leu Ala Pro Ser Leu Ala Lys  
 260 265 270  
 Val Asp Met Glu Met Thr Gln Leu Thr Gln Glu Asn Ala Asp Phe Ala  
 275 280 285

Thr Arg Asp Arg Tyr His His Ser Ser Leu Val Asn Arg Glu Gln Leu  
 290 295 300

Met Pro His Tyr  
 305

<210> 49  
 <211> 772  
 <212> DNA  
 <213> Homo sapiens

<400> 49  
 tgtcttttagt ttactcagca tcagctacta acatacctga acgaagatct tgttctaaga 60  
 cattgtatgt gaagatgata cctgcaaaag acatggctaa agttatgatt gtcattgttg 120  
 caatttgttt tcttacaaaa tcggatggga aatctgttaa gaagagatct gtgagtgaaa 180  
 tacagcttat gcataacctg ggaaaacatc tgaactcgat ggagagagta gaatggctgc 240  
 gtaagaagct gcaggatgtg cacaattttg ttgcccttgg agctcctcta gctoccagag 300  
 atgctggttc ccagaggccc cgaaaaaagg aagacaatgt cttggttgag agccatgaaa 360  
 aaagtcttgg agaggcagac aaagctgatg tgaatgtatt aactaaagct aaatcccagt 420  
 gaaaatgaaa acagatatgt tcagagttct gctctagaca gtgtagggca acaatacatg 480  
 ctgctaattc aaagctctat taagatttcc aagtgccaat atttctgata taacaaacta 540  
 catgtaatcc atcactagcc atgataactg caattttaat tgattattct gattccactt 600  
 ttattcattt gagttatttt aattatcttt tctattgttt attcttttta aagtatgtta 660  
 ttgcataatt tataaaagaa taaaattcga cttttaaac tctcttctac cttaaaatgt 720  
 aaaacaaaaa tgtaatgatc ataagtctaa ataatgaag tatttctcac tc 772

<210> 50  
 <211> 115  
 <212> PRT  
 <213> Homo sapiens

<400> 50

Met Ile Pro Ala Lys Asp Met Ala Lys Val Met Ile Val Met Leu Ala  
 1 5 10 15

Ile Cys Phe Leu Thr Lys Ser Asp Gly Lys Ser Val Lys Lys Arg Ser  
 20 25 30

Val Ser Glu Ile Gln Leu Met His Asn Leu Gly Lys His Leu Asn Ser  
 35 40 45

Met Glu Arg Val Glu Trp Leu Arg Lys Lys Leu Gln Asp Val His Asn  
 50 55 60

Phe Val Ala Leu Gly Ala Pro Leu Ala Pro Arg Asp Ala Gly Ser Gln  
 65 70 75 80

Arg Pro Arg Lys Lys Glu Asp Asn Val Leu Val Glu Ser His Glu Lys  
 85 90 95

Ser Leu Gly Glu Ala Asp Lys Ala Asp Val Asn Val Leu Thr Lys Ala  
 100 105 110

Lys Ser Gln  
 115

<210> 51  
 <211> 1742  
 <212> DNA  
 <213> Homo sapiens

<400> 51  
 gttagagaga agcgagctgc tgtctgacca gcagcttggg attggtggaa ggaagcaggc 60  
 caggccctgt gaggagtcaa gggtctgagc agacaggcca accggaggac aggattccct 120  
 ggaggccaca gaggagcacc aaggagaaga tctgcctgtg ggtccccatt gccagcttt 180  
 tgctgcact cttgcctgct gccctgagca ggtcatcat gtcttctgag cagaagagtc 240  
 agcactgcaa gcctgaggaa ggcgttgagg cccaagaaga ggccctgggc ctggtgggtg 300  
 cacaggctcc tactactgag gagcaggagg ctgctgtctc ctctctctct cctctggtcc 360  
 ctggcaccct ggaggaagtg cctgctgctg agtcagcagg tcctccccag agtcctcagg 420  
 gagcctctgc cttaccact accatcagct tcacttgctg gaggcaaccc aatgagggtt 480  
 ccagcagcca agaagaggag gggccaagca cctgcctga cgcagagtcc ttgttccgag 540  
 aagcactcag taacaagggtg gatgagttgg ctcatcttct gctccgcaag tatcagacca 600  
 aggagctggt cacaaaggca gaaatgctgg agagagtcac caaaaattac aagcgtgct 660  
 ttctgtgat cttcggcaaa gcctccgagt ccctgaagat gatctttggc attgacgtga 720  
 aggaagtggg cccaccagc aacacctaca ccctgtcac ctgcctgggc ctttctatg 780

```

atggcctgct gggtaataat cagatctttc ccaagacagg ccttctgata atcgctcctgg 840
gcacaattgc aatggagggc gacagcgctt ctgaggagga aatctgggag gagctgggtg 900
tgatgggggt gtatgatggg agggagcaca ctgtctatgg ggagcccagg aaactgctca 960
ccaagattg ggtgcaggaa aactacctgg agtaccggca ggtaccggc agtaatcctg 1020
cgcgctatga gttcctgtgg ggtccaaggg ctctggotga aaccagctat gtgaaagtcc 1080
tgagcatgt ggtcagggtc aatgcaagag ttcgcattgc ctaccatcc ctgctgaag 1140
cagctttggt agaggaggaa gagggagtct gagcatgagt tgcagccagg gctgtgggga 1200
aggggcaggg ctgggccagt gcatctaaca gccctgtgca gcagcttccc ttgcctcgtg 1260
taacatgagg ccattcttc actctgtttg aagaaaatag tcagtgttct tagtagtggg 1320
tttctatttt gttggatgac ttggagattt atctctgttt ctttttacia ttgttgaaat 1380
gttcctttta atggatggtt gaattaactt cagcatccaa gtttatgaat cgtagttaac 1440
gtatattgct gttaatatag tttaggagta agagtcttgt tttttattca gattgggaaa 1500
tccgttctat tttgtgaatt tgggacataa taacagcagt ggagtaagta tttagaagtg 1560
tgaattcacc gtgaaatagg tgagataaat taaaagatac ttaattcccc cttatgcct 1620
cagtctattc tgtaaaattt aaaaaatata tatgcatacc tggatttcct tggcttcgtg 1680
aatgtaagag aaattaaatc tgaataaata attctttctg ttaaaaaaaaa aaaaaaaaaa 1740
aa 1742

```

<210> 52  
 <211> 317  
 <212> PRT  
 <213> Homo sapiens

<400> 52

Met Ser Ser Glu Gln Lys Ser Gln His Cys Lys Pro Glu Glu Gly Val  
 1 5 10 15

Glu Ala Gln Glu Glu Ala Leu Gly Leu Val Gly Ala Gln Ala Pro Thr  
 20 25 30

Thr Glu Glu Gln Glu Ala Ala Val Ser Ser Ser Ser Pro Leu Val Pro  
 35 40 45

Gly Thr Leu Glu Glu Val Pro Ala Ala Glu Ser Ala Gly Pro Pro Gln  
 50 55 60

Ser Pro Gln Gly Ala Ser Ala Leu Pro Thr Thr Ile Ser Phe Thr Cys  
 65 70 75 80  
 Trp Arg Gln Pro Asn Glu Gly Ser Ser Ser Gln Glu Glu Glu Gly Pro  
 85 90 95  
 Ser Thr Ser Pro Asp Ala Glu Ser Leu Phe Arg Glu Ala Leu Ser Asn  
 100 105 110  
 Lys Val Asp Glu Leu Ala His Phe Leu Leu Arg Lys Tyr Arg Ala Lys  
 115 120 125  
 Glu Leu Val Thr Lys Ala Glu Met Leu Glu Arg Val Ile Lys Asn Tyr  
 130 135 140  
 Lys Arg Cys Phe Pro Val Ile Phe Gly Lys Ala Ser Glu Ser Leu Lys  
 145 150 155 160  
 Met Ile Phe Gly Ile Asp Val Lys Glu Val Asp Pro Thr Ser Asn Thr  
 165 170 175  
 Tyr Thr Leu Val Thr Cys Leu Gly Leu Ser Tyr Asp Gly Leu Leu Gly  
 180 185 190  
 Asn Asn Gln Ile Phe Pro Lys Thr Gly Leu Leu Ile Ile Val Leu Gly  
 195 200 205  
 Thr Ile Ala Met Glu Gly Asp Ser Ala Ser Glu Glu Glu Ile Trp Glu  
 210 215 220  
 Glu Leu Gly Val Met Gly Val Tyr Asp Gly Arg Glu His Thr Val Tyr  
 225 230 235 240  
 Gly Glu Pro Arg Lys Leu Leu Thr Gln Asp Trp Val Gln Glu Asn Tyr  
 245 250 255  
 Leu Glu Tyr Arg Gln Val Pro Gly Ser Asn Pro Ala Arg Tyr Glu Phe  
 260 265 270  
 Leu Trp Gly Pro Arg Ala Leu Ala Glu Thr Ser Tyr Val Lys Val Leu  
 275 280 285

Glu His Val Val Arg Val Asn Ala Arg Val Arg Ile Ala Tyr Pro Ser  
 290 295 300

Leu Arg Glu Ala Ala Leu Leu Glu Glu Glu Gly Val  
 305 310 315

<210> 53  
 <211> 1833  
 <212> DNA  
 <213> Homo sapiens

<400> 53  
 ggcacgagggc tgggggtcag agagaagggg gaggcctcct tctgaggggc ggcttgatac 60  
 cgggtggagga gctccaggaa gcaggcaggc cttgggtctga gacagtgtcc tcaggtcgca 120  
 gagcagagga gacccaggca gtgtcagcag tgaaggttct cgggacaggc taaccaggag 180  
 gacaggagcc ccaagaggcc ccagagcagc actgacgaag acctgcctgt gggctctccat 240  
 cgcccagctc ctgcccacgc tcctgactgc tgccctgacc agagtcacatca tgtctctcga 300  
 gcagaggagt ccgcactgca agcctgatga agaccttgaa gcccaaggag aggacttggg 360  
 cctgatgggt gcacaggaac ccacaggcga ggaggaggag actacctcct cctctgacag 420  
 caaggaggag gaggtgtctg ctgctgggtc atcaagtcct cccagagtc ctcagggagg 480  
 cgcttctctc tccatttccg tctactacac tttatggagc caattcgatg agggctccag 540  
 cagtcaagaa gaggaagagc caagctctc ggtcgacca gctcagctgg agttcatgtt 600  
 ccaagaagca ctgaaattga aggtggctga gttgggtcat ttcctgctcc acaaatatcg 660  
 agtcaaggag ccggtcacaa aggcagaaat gctggagagc gtcatacaaaa attacaagcg 720  
 ctactttcct gtgatcttcg gcaaagcctc cgagttcatg caggtgatct ttggcactga 780  
 tgtgaaggag gtggaccccg ccggccactc ctacatcctt gtcactgctc ttggcctctc 840  
 gtgcgatagc atgctgggtg atggtcatag catgcccag gccgccctcc tgatcattgt 900  
 cctgggtgtg atcctaacca aagacaactg cgcccctgaa gaggttatct gggaagcgtt 960  
 gagtgtgatg ggggtgtatg ttgggaagga gcacatgttc tacggggagc ccaggaagct 1020  
 gctcacccaa gattgggtgc aggaaaacta cctggagtag cggcagggtgc ccggcagtga 1080  
 tcctgcgcac tacgagttcc tgtgggggtc caaggccac gctgaaacca gctatgagaa 1140  
 ggtcataaat tatttgggtca tgctcaatgc aagagagccc atctgctacc catcccttta 1200  
 tgaagaggtt ttgggagagg agcaagagg agtctgagca ccagccgcag ccggggccaa 1260

```

agtttgtggg gtcagggccc catccagcag ctgccctgcc ccatgtgaca tgaggcccat 1320
tcttcgctct gtgtttgaag agagcaatca gtgttctcag tggcagtggg tggaagtgag 1380
cacactgtat gtcactctctg ggttccttgt ctattgggtg atttgagat ttatccttgc 1440
tcccttttgg aattgttcaa atgttctttt aatggtcagt ttaatgaact tcaccatcga 1500
agttaatgaa tgacagtagt cacacatatt gctgtttatg ttatttagga gtaagattct 1560
tgcttttgag tcacatgggg aaatccctgt tattttgtga attgggacaa gataacatag 1620
cagaggaatt aataattttt ttgaaacttg aacttagcag caaaatagag ctcataaaga 1680
aatagtgaaa tgaaaatgta gttaattctt gccttatacc tctttctctc tcctgtaaaa 1740
ttaaaacata tacatgtata cctggatttg cttggcttct ttgagcatgt aagagaaata 1800
aaaattgaaa gaataaaaaa aaaaaaaaaa aaa 1833

```

```

<210> 54
<211> 315
<212> PRT
<213> Homo sapiens

```

```

<400> 54

```

```

Met Ser Leu Glu Gln Arg Ser Pro His Cys Lys Pro Asp Glu Asp Leu
1          5          10          15

```

```

Glu Ala Gln Gly Glu Asp Leu Gly Leu Met Gly Ala Gln Glu Pro Thr
20          25          30

```

```

Gly Glu Glu Glu Glu Thr Thr Ser Ser Ser Asp Ser Lys Glu Glu Glu
35          40          45

```

```

Val Ser Ala Ala Gly Ser Ser Ser Pro Pro Gln Ser Pro Gln Gly Gly
50          55          60

```

```

Ala Ser Ser Ser Ile Ser Val Tyr Tyr Thr Leu Trp Ser Gln Phe Asp
65          70          75          80

```

```

Glu Gly Ser Ser Ser Gln Glu Glu Glu Glu Pro Ser Ser Ser Val Asp
85          90          95

```

```

Pro Ala Gln Leu Glu Phe Met Phe Gln Glu Ala Leu Lys Leu Lys Val
100         105         110

```



Ala Glu Leu Val His Phe Leu Leu His Lys Tyr Arg Val Lys Glu Pro  
 115 120 125

Val Thr Lys Ala Glu Met Leu Glu Ser Val Ile Lys Asn Tyr Lys Arg  
 130 135 140

Tyr Phe Pro Val Ile Phe Gly Lys Ala Ser Glu Phe Met Gln Val Ile  
 145 150 155 160

Phe Gly Thr Asp Val Lys Glu Val Asp Pro Ala Gly His Ser Tyr Ile  
 165 170 175

Leu Val Thr Ala Leu Gly Leu Ser Cys Asp Ser Met Leu Gly Asp Gly  
 180 185 190

His Ser Met Pro Lys Ala Ala Leu Leu Ile Ile Val Leu Gly Val Ile  
 195 200 205

Leu Thr Lys Asp Asn Cys Ala Pro Glu Glu Val Ile Trp Glu Ala Leu  
 210 215 220

Ser Val Met Gly Val Tyr Val Gly Lys Glu His Met Phe Tyr Gly Glu  
 225 230 235 240

Pro Arg Lys Leu Leu Thr Gln Asp Trp Val Gln Glu Asn Tyr Leu Glu  
 245 250 255

Tyr Arg Gln Val Pro Gly Ser Asp Pro Ala His Tyr Glu Phe Leu Trp  
 260 265 270

Gly Ser Lys Ala His Ala Glu Thr Ser Tyr Glu Lys Val Ile Asn Tyr  
 275 280 285

Leu Val Met Leu Asn Ala Arg Glu Pro Ile Cys Tyr Pro Ser Leu Tyr  
 290 295 300

Glu Glu Val Leu Gly Glu Glu Gln Glu Gly Val  
 305 310 315

<210> 55  
 <211> 503  
 <212> DNA  
 <213> Homo sapiens

<400> 55  
gacagcggct tccttgatcc ttgccacccg cgactgaaca ccgacagcag cagcctcacc 60  
atgaagttgc tgatggctct catgctggcg gccctctccc agcactgcta cgcaggctct 120  
ggctgcccct tattggagaa tgtgatttcc aagacaatca atccacaagt gtctaagact 180  
gaatacaaag aacttcttca agagttcata gacgacaatg ccactacaaa tgccatagat 240  
gaattgaagg aatgttttct taaccaaacg gatgaaactc tgagcaatgt tgagggtgtt 300  
atgcaattaa tatatgacag cagtctttgt gatttatattt aactttctgc aagacctttg 360  
gctcacagaa ctgcagggtg tggtagagaaa ccaactacgg attgctgcaa accacacctt 420  
ctctttctta tgtcttttta ctacaaacta caagacaatt gttgaaacct gctatacatg 480  
tttatitttaa taaattgatg gca 503

<210> 56  
<211> 93  
<212> PRT  
<213> Homo sapiens

<400> 56

Met Lys Leu Leu Met Val Leu Met Leu Ala Ala Leu Ser Gln His Cys  
1 5 10 15

Tyr Ala Gly Ser Gly Cys Pro Leu Leu Glu Asn Val Ile Ser Lys Thr  
20 25 30

Ile Asn Pro Gln Val Ser Lys Thr Glu Tyr Lys Glu Leu Leu Gln Glu  
35 40 45

Phe Ile Asp Asp Asn Ala Thr Thr Asn Ala Ile Asp Glu Leu Lys Glu  
50 55 60

Cys Phe Leu Asn Gln Thr Asp Glu Thr Leu Ser Asn Val Glu Val Phe  
65 70 75 80

Met Gln Leu Ile Tyr Asp Ser Ser Leu Cys Asp Leu Phe  
85 90

<210> 57  
<211> 786  
<212> DNA  
<213> Homo sapiens

<400> 57  
 atggattggg ggacgctgca cactttcatc ggggggtgtca acaaactc caccagcatc 60  
 gggaagggtgt ggatcacagt catctttatt ttccgagtca tgatcctagt ggtggctgcc 120  
 caggaagtgt ggggtgacga gcaagaggac ttctgtctgca acacactgca accgggatgc 180  
 aaaaatgtgt gctatgacca ctttttcccg gtgtcccaca tccggctgtg ggcctccag 240  
 ctgatcttcg tctccacccc agcgtgctg gtggccatgc atgtggccta ctacaggcac 300  
 gaaaccactc gcaagttcag gcgaggagag aagaggaatg atttcaaaga catagaggac 360  
 attaaaaagc acaaggttcg gatagagggg tgcgtgtggt ggacgtacac cagcagcatc 420  
 tttttccgaa tcatctttga agcagccttt atgtatgtgt tttacttcct ttacaatggg 480  
 taccacctgc cctgggtgtt gaaatgtggg attgaccctt gcccacact tgttgactgc 540  
 tttatttcta ggccaacaga gaagaccgtg tttaccatth ttatgatttc tgcgtctgtg 600  
 atttgcatgc tgcttaacgt ggcagagttg tgctacctgc tgctgaaagt gtgttttagg 660  
 agatcaaaga gagcacagac gcaaaaaaat caccccaatc atgccctaaa ggagagtaag 720  
 cagaatgaaa tgaatgagct gatttcagat agtgggtcaaa atgcaatcac aggtttccca 780  
 agctaa 786

<210> 58  
 <211> 261  
 <212> PRT  
 <213> Homo sapiens

<400> 58

Met Asp Trp Gly Thr Leu His Thr Phe Ile Gly Gly Val Asn Lys His  
 1 5 10 15

Ser Thr Ser Ile Gly Lys Val Trp Ile Thr Val Ile Phe Ile Phe Arg  
 20 25 30

Val Met Ile Leu Val Val Ala Ala Gln Glu Val Trp Gly Asp Glu Gln  
 35 40 45

Glu Asp Phe Val Cys Asn Thr Leu Gln Pro Gly Cys Lys Asn Val Cys  
 50 55 60

Tyr Asp His Phe Phe Pro Val Ser His Ile Arg Leu Trp Ala Leu Gln  
 65 70 75 80

Leu Ile Phe Val Ser Thr Pro Ala Leu Leu Val Ala Met His Val Ala  
85 90 95

Tyr Tyr Arg His Glu Thr Thr Arg Lys Phe Arg Arg Gly Glu Lys Arg  
100 105 110

Asn Asp Phe Lys Asp Ile Glu Asp Ile Lys Lys His Lys Val Arg Ile  
115 120 125

Glu Gly Ser Leu Trp Trp Thr Tyr Thr Ser Ser Ile Phe Phe Arg Ile  
130 135 140

Ile Phe Glu Ala Ala Phe Met Tyr Val Phe Tyr Phe Leu Tyr Asn Gly  
145 150 155 160

Tyr His Leu Pro Trp Val Leu Lys Cys Gly Ile Asp Pro Cys Pro Asn  
165 170 175

Leu Val Asp Cys Phe Ile Ser Arg Pro Thr Glu Lys Thr Val Phe Thr  
180 185 190

Ile Phe Met Ile Ser Ala Ser Val Ile Cys Met Leu Leu Asn Val Ala  
195 200 205

Glu Leu Cys Tyr Leu Leu Leu Lys Val Cys Phe Arg Arg Ser Lys Arg  
210 215 220

Ala Gln Thr Gln Lys Asn His Pro Asn His Ala Leu Lys Glu Ser Lys  
225 230 235 240

Gln Asn Glu Met Asn Glu Leu Ile Ser Asp Ser Gly Gln Asn Ala Ile  
245 250 255

Thr Gly Phe Pro Ser  
260

<210> 59  
<211> 1064  
<212> DNA  
<213> Homo sapiens

<400> 59  
attagaattt atcatcaggg aagatatctt ttatgttgag cagctgctat ctgatcttga

60

```

cagactgtcc tcttagagga ctgttgaagt ccattctagt cattttgtaa cttcataact 120
gcagaaagaa atgatgcaag gactgttttag tggactgaga tggctgagca ggttcttggc 180
ctgaattatc cagaggagat aggtggatct agcttcagag gaagtctaca cccattcccc 240
ttctgcttac aatgtaccca tgatatgtgt ttagcacagt aatactgtaa caggacatca 300
catggaaaaa tcaaagcagc tggctcactg tatttaactg aaaagaatgc ctacagattg 360
gatatttaat agggaaaatt aaggcacttt aataacaaac ttcattatgt gaaacttggt 420
gaatattaac atacaatata ccttgtatat taatgccata gtttttagta acactaattt 480
aaacaacaaa tttaaggggt gctggcatat cccagtgaca ccttcagttt tattgctgct 540
tagtattttc tagtaaatta gttttaatta ttggcagtct gttgggcacc atttgggaaa 600
gaaataaatt ggtctcagt tagcagactt gtagccaaaa actttgaatt aaaaataagt 660
ataataacag aatattatct cattttttaa ggaattgtat tatttttgaa gtgctgtgcg 720
ggtgataatg gtttcggctg gggctctctat cccaccccc cctattaaat ttgtaatctc 780
ccctaaattt tccacacggg gaagtgcgcc cccctgggct cccccccctg caaccaatgg 840
ccccccccc ccccttctat cctcctccc cccccggtt ccccttctt cttccccccc 900
cccctttcct cccgtctcca tttccgcct taccgcgtt tccccctatt ctacaaacca 960
ccccccctc cctccctct atcgtcccc gccgcctata tatataaacc cactgcttc 1020
tctgtccttt cccctttat tttccccac accgtcttac cccc 1064

```

<210> 60  
 <211> 112  
 <212> PRT  
 <213> Homo sapiens

<400> 60

```

Met Val Ser Ala Gly Val Ser Ile Pro Thr Pro Pro Ile Lys Phe Val
1           5           10           15

```

```

Ile Ser Pro Lys Phe Ser Thr Arg Gly Ser Ala Pro Pro Trp Ala Pro
          20           25           30

```

```

Pro Pro Ala Thr Asn Gly Thr Pro Pro Pro Leu Leu Ser Leu Ile Pro
          35           40           45

```

```

Pro Pro Phe Pro Pro Ser Ser Ser Pro Pro Pro Phe Pro Pro Val Ser
          50           55           60

```

Ile Ser Arg Leu Thr Pro Leu Ser Pro Tyr Ser Thr Asn His Pro Pro  
65 70 75 80

Leu Pro Pro Leu Tyr Arg Pro Pro Pro Pro Ile Tyr Ile Asn Pro Thr  
85 90 95

Ala Ser Leu Ser Phe Pro Pro Leu Phe Ser Pro Thr Pro Ser Tyr Pro  
100 105 110

<210> 61  
<211> 2511  
<212> DNA  
<213> Homo sapiens

<400> 61  
ccgacgccgc agctcagact ccgctcagcc atggccgggc cgcgcgctg cgcgccgctc 60  
ctgctcctgc tctgctcgg ggagcttctg gcggccgccc gggcgagag agtgggactc 120  
cccggcccc ccggcccccc agggccgccc ggcaagccc gccaggacgg cattgacgga 180  
gaagctggtc ctccaggtct gcttggggcc ccgggaccaa agggggcccc aggaaagccg 240  
gggaaaccag gagaggctgg gctgccggga ctgccgggtg tggatggtct gactggacga 300  
gatggacccc ctggacccaa ggggtcccct ggggaacggg gaagtctggg acccccgggg 360  
ccgcccgggc tggggggcaa aggcctccct ggaccccccg gagaggcagg agtgagcggc 420  
ccccaggtg ggatcggcct ccgcgggccc ccgggacctc ctggactccc cggcctccct 480  
ggtccccag gacctcccg accccctgga caccaggag ttctccctga aggcgctact 540  
gaccttcagt gcccaagtat ctgcccgcca ggtccccag ggccccctgg aatgccaggg 600  
ttcaaggga ccaactggcta caaaggcgag cagggggaag tcggcaagga cggcgagaag 660  
ggtgaccctg gccccctgg gcccgccggc ctcccgggca gcgtggggct gcagggcccc 720  
cggggattac gaggactgcc agggccactc gggccccctg gggaccggg tccattggg 780  
ttccgagggc cgcctgggat ccaggagcg cctgggaaag cgggtgaccg aggcgagagg 840  
ggcccagaag ggttcgcgg cccaagggt gacctcggca gacctggtcc caagggaacc 900  
cccggagtgg ccgggccaag cggagagccg ggcattgccg gcaaggacgg ccagaatggc 960  
gtgccaggac tcgatggcca gaaggagag gctggtcgca acggtgctcc gggagagaag 1020  
ggccccaacg ggctgccgg cctccctgga cgagcgggt ccaaaggcga gaaggagaa 1080  
cggggcagag ctggggagct gggtgaggcc gggccctctg gagagccagg cgtccctgga 1140

```

gatgctggca tgcctgggga gcgcggtgag gctggccacc ggggctcagc gggggccctc 1200
ggcccacaag gccctcccgg agcccctggt gtccgaggct tccagggcca gaagggcagc 1260
atgggagacc ccggccttcc agggccccag ggcctccgag gtgacgtggg cgaccggggt 1320
ccgggaggtg ccgcaggccc taaggagagac cagggtattg caggttccga cggctcttct 1380
ggggataaag gagaactggg tcccagcggc ctggtcggac ccaaaggaga gtctggcagt 1440
cgaggggagc tgggccccaa aggcaccagc ggtcccaacg gcaccagcgg tgttcagggt 1500
gtccccgggc cccccggtcc tctgggcctg cagggcgtcc cgggtgttcc tggcatcacg 1560
gggaagccgg gagttccggg gaaggaggcc agcgagcagc gcatcaggga gctgtgtggg 1620
gggatgatca gcgaacaaat tgcacagtta gccgcgcacc taaggaagcc tttggcacc 1680
gggtccattg gtcgccccgg tccagctggc cccctcgggc cccaggacc ccaggctcc 1740
attggtcacc ctggcgctcg aggaccccct ggataccgag gtcccactgg ggagctggga 1800
gaccccgggc ccagaggaaa ccagggtgac agaggagaca aaggcgcggc aggagcaggg 1860
ctggacgggc ctgaaggaga ccaggggccc caaggacccc aaggcgtgcc cggcaccagc 1920
aaggacggcc aggacggtgc tcccggcgag cctgggcctc ccggagatcc tgggcttcca 1980
ggtgccattg gggcccaggg gacaccgggg atctgcgaca cctcagcctg ccaaggagcc 2040
gtgttaggag gggtcgggga gaaatcaggc tctcgaagct cataaaattc aacgtgagga 2100
agcaagtgac aaggacgccc gaagcacagt ggacggtcat gaaggagcgg ggggtgtggca 2160
ggcgggtgac gtccaggaga gggagcgccc ctggctgccc ctgggccgcc gactggacgc 2220
gcgggccttg ccagcgagca cctcatcgg gctgtcgct gacagcatac ctcaaaaggc 2280
cctagctaataaacctgtaa gccagcatt tgagagaagg tagggtgtgt atatataaaa 2340
ggttgtgtac aactccacga ggtgaaaaat attcagtaac ttgtttacat agcatttgtg 2400
taaagactat gatctcatcc caataaaatg atatattaaa ccttcagatt aatgactggc 2460
tacagagtaa caaaaaataa agaatttaat gtacagtaaa ttctctccca t 2511

```

<210> 62  
 <211> 684  
 <212> PRT  
 <213> Homo sapiens

<400> 62

Met Ala Gly Pro Arg Ala Cys Ala Pro Leu Leu Leu Leu Leu Leu  
 1 5 10 15

Gly Glu Leu Leu Ala Ala Ala Gly Ala Gln Arg Val Gly Leu Pro Gly  
 20 25 30

Pro Pro Gly Pro Pro Gly Pro Pro Gly Lys Pro Gly Gln Asp Gly Ile  
 35 40 45

Asp Gly Glu Ala Gly Pro Pro Gly Leu Pro Gly Pro Pro Gly Pro Lys  
 50 55 60

Gly Ala Pro Gly Lys Pro Gly Lys Pro Gly Glu Ala Gly Leu Pro Gly  
 65 70 75 80

Leu Pro Gly Val Asp Gly Leu Thr Gly Arg Asp Gly Pro Pro Gly Pro  
 85 90 95

Lys Gly Ala Pro Gly Glu Arg Gly Ser Leu Gly Pro Pro Gly Pro Pro  
 100 105 110

Gly Leu Gly Gly Lys Gly Leu Pro Gly Pro Pro Gly Glu Ala Gly Val  
 115 120 125

Ser Gly Pro Pro Gly Gly Ile Gly Leu Arg Gly Pro Pro Gly Pro Pro  
 130 135 140

Gly Leu Pro Gly Leu Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly  
 145 150 155 160

His Pro Gly Val Leu Pro Glu Gly Ala Thr Asp Leu Gln Cys Pro Ser  
 165 170 175

Ile Cys Pro Pro Gly Pro Pro Gly Pro Pro Gly Met Pro Gly Phe Lys  
 180 185 190

Gly Pro Thr Gly Tyr Lys Gly Glu Gln Gly Glu Val Gly Lys Asp Gly  
 195 200 205

Glu Lys Gly Asp Pro Gly Pro Pro Gly Pro Ala Gly Leu Pro Gly Ser  
 210 215 220

Val Gly Leu Gln Gly Pro Arg Gly Leu Arg Gly Leu Pro Gly Pro Leu  
 225 230 235 240



Gly Pro Pro Gly Asp Arg Gly Pro Ile Gly Phe Arg Gly Pro Pro Gly  
 245 250 255  
 Ile Pro Gly Ala Pro Gly Lys Ala Gly Asp Arg Gly Glu Arg Gly Pro  
 260 265 270  
 Glu Gly Phe Arg Gly Pro Lys Gly Asp Leu Gly Arg Pro Gly Pro Lys  
 275 280 285  
 Gly Thr Pro Gly Val Ala Gly Pro Ser Gly Glu Pro Gly Met Pro Gly  
 290 295 300  
 Lys Asp Gly Gln Asn Gly Val Pro Gly Leu Asp Gly Gln Lys Gly Glu  
 305 310 315 320  
 Ala Gly Arg Asn Gly Ala Pro Gly Glu Lys Gly Pro Asn Gly Leu Pro  
 325 330 335  
 Gly Leu Pro Gly Arg Ala Gly Ser Lys Gly Glu Lys Gly Glu Arg Gly  
 340 345 350  
 Arg Ala Gly Glu Leu Gly Glu Ala Gly Pro Ser Gly Glu Pro Gly Val  
 355 360 365  
 Pro Gly Asp Ala Gly Met Pro Gly Glu Arg Gly Glu Ala Gly His Arg  
 370 375 380  
 Gly Ser Ala Gly Ala Leu Gly Pro Gln Gly Pro Pro Gly Ala Pro Gly  
 385 390 395 400  
 Val Arg Gly Phe Gln Gly Gln Lys Gly Ser Met Gly Asp Pro Gly Leu  
 405 410 415  
 Pro Gly Pro Gln Gly Leu Arg Gly Asp Val Gly Asp Arg Gly Pro Gly  
 420 425 430  
 Gly Ala Ala Gly Pro Lys Gly Asp Gln Gly Ile Ala Gly Ser Asp Gly  
 435 440 445  
 Leu Pro Gly Asp Lys Gly Glu Leu Gly Pro Ser Gly Leu Val Gly Pro  
 450 455 460

Lys Gly Glu Ser Gly Ser Arg Gly Glu Leu Gly Pro Lys Gly Thr Gln  
465 470 475 480

Gly Pro Asn Gly Thr Ser Gly Val Gln Gly Val Pro Gly Pro Pro Gly  
485 490 495

Pro Leu Gly Leu Gln Gly Val Pro Gly Val Pro Gly Ile Thr Gly Lys  
500 505 510

Pro Gly Val Pro Gly Lys Glu Ala Ser Glu Gln Arg Ile Arg Glu Leu  
515 520 525

Cys Gly Gly Met Ile Ser Glu Gln Ile Ala Gln Leu Ala Ala His Leu  
530 535 540

Arg Lys Pro Leu Ala Pro Gly Ser Ile Gly Arg Pro Gly Pro Ala Gly  
545 550 555 560

Pro Pro Gly Pro Pro Gly Pro Pro Gly Ser Ile Gly His Pro Gly Ala  
565 570 575

Arg Gly Pro Pro Gly Tyr Arg Gly Pro Thr Gly Glu Leu Gly Asp Pro  
580 585 590

Gly Pro Arg Gly Asn Gln Gly Asp Arg Gly Asp Lys Gly Ala Ala Gly  
595 600 605

Ala Gly Leu Asp Gly Pro Glu Gly Asp Gln Gly Pro Gln Gly Pro Gln  
610 615 620

Gly Val Pro Gly Thr Ser Lys Asp Gly Gln Asp Gly Ala Pro Gly Glu  
625 630 635 640

Pro Gly Pro Pro Gly Asp Pro Gly Leu Pro Gly Ala Ile Gly Ala Gln  
645 650 655

Gly Thr Pro Gly Ile Cys Asp Thr Ser Ala Cys Gln Gly Ala Val Leu  
660 665 670

Gly Gly Val Gly Glu Lys Ser Gly Ser Arg Ser Ser  
675 680

<210> 63  
 <211> 1441  
 <212> DNA  
 <213> Homo sapiens

<400> 63  
 ctccaaaacc ctggtcgaca tggacatggc cgactacagt gctgcactgg acccagccta 60  
 caccaccctg gaatttgaga atgtgcaggt gttgacgatg ggcaatgaca cgtccccatc 120  
 agaaggcacc aacctcaacg cgcccaacag cctgggtgtc agcgccctgt gtgccatctg 180  
 cggggaccgg gccacgggca aacactacgg tgcctcgagc tgtgacggct gcaagggctt 240  
 cttccggagg agcgtgcgga agaaccacat gtactcctgc agatttagcc ggcagtgcgt 300  
 ggtggacaaa gacaagagga accagtgccg ctactgcagg ctcaagaaat gcttccgggc 360  
 tggcatgaag aaggaagccg tccagaatga gcgggaccgg atcagcactc gaaggtcaag 420  
 ctatgaggac agcagcctgc cctccatcaa tgcgctcctg caggcggagg tctgtccccg 480  
 acagatcacc tccccgtct cgggatcaa cggcgacatt cgggcgaaga agattgccag 540  
 catcgcagat gtgtgtgagt ccatgaagga gcagctgctg gttctcgttg agtgggcca 600  
 gtacatccca gctttctgcg agtccccct ggacgaccag gtggccctgc tcagagccca 660  
 tgctggcgag cacctgctgc tcggagccac caagagatcc atggtgttca aggacgtgct 720  
 gctcctaggc aatgactaca ttgtccctcg gcactgcccg gagctggcgg agatgagccg 780  
 ggtgtccata cgcctccttg acgagctggt gctgcccttc caggagctgc agatcgatga 840  
 caatgagtat gcctacctca aagccatcat cttctttgac ccagatgcca aggggctgag 900  
 cgatccaggg aagatcaagc ggctgcgttc ccagggtcag gtgagcttgg aggactacat 960  
 caacgaccgc cagtatgact cgcgtggccg ctttgagag ctgctgctgc tgctgccac 1020  
 cttgcagagc atcacctggc agatgatcga gcagatccag ttcacaaagc tcttcggcat 1080  
 ggccaagatt gacaacctgt tgcaggagat gctgctggga gggccccca gcgatgcacc 1140  
 ccatgcccac cccccctgc accctcacct gatgcaggaa catatgggaa ccaacgtcat 1200  
 cgttgccaac acaatgccca ctcacctcag caacggacag atgtgtgagt ggccccgacc 1260  
 caggggacag gcagccaccc ctgagacccc acagccctca ccgccagggtg cgtcagggtc 1320  
 tgagccctat aagctcctgc cgggagccgt cgccacaatc gtcaagcccc tctctgccat 1380  
 cccccagccg accatcacca agcaggaagt tatctagcaa gccgctgggg cttgggggct 1440  
 c 1441

<210> 64  
 <211> 465  
 <212> PRT  
 <213> Homo sapiens

<400> 64

Met Asp Met Ala Asp Tyr Ser Ala Ala Leu Asp Pro Ala Tyr Thr Thr  
 1 5 10 15

Leu Glu Phe Glu Asn Val Gln Val Leu Thr Met Gly Asn Asp Thr Ser  
 20 25 30

Pro Ser Glu Gly Thr Asn Leu Asn Ala Pro Asn Ser Leu Gly Val Ser  
 35 40 45

Ala Leu Cys Ala Ile Cys Gly Asp Arg Ala Thr Gly Lys His Tyr Gly  
 50 55 60

Ala Ser Ser Cys Asp Gly Cys Lys Gly Phe Phe Arg Arg Ser Val Arg  
 65 70 75 80

Lys Asn His Met Tyr Ser Cys Arg Phe Ser Arg Gln Cys Val Val Asp  
 85 90 95

Lys Asp Lys Arg Asn Gln Cys Arg Tyr Cys Arg Leu Lys Lys Cys Phe  
 100 105 110

Arg Ala Gly Met Lys Lys Glu Ala Val Gln Asn Glu Arg Asp Arg Ile  
 115 120 125

Ser Thr Arg Arg Ser Ser Tyr Glu Asp Ser Ser Leu Pro Ser Ile Asn  
 130 135 140

Ala Leu Leu Gln Ala Glu Val Leu Ser Arg Gln Ile Thr Ser Pro Val  
 145 150 155 160

Ser Gly Ile Asn Gly Asp Ile Arg Ala Lys Lys Ile Ala Ser Ile Ala  
 165 170 175

Asp Val Cys Glu Ser Met Lys Glu Gln Leu Leu Val Leu Val Glu Trp  
 180 185 190

Ala Lys Tyr Ile Pro Ala Phe Cys Glu Leu Pro Leu Asp Asp Gln Val

195	200	205
Ala Leu Leu Arg Ala His Ala Gly Glu His Leu Leu Leu Gly Ala Thr		
210	215	220
Lys Arg Ser Met Val Phe Lys Asp Val Leu Leu Leu Gly Asn Asp Tyr		
225	230	235 240
Ile Val Pro Arg His Cys Pro Glu Leu Ala Glu Met Ser Arg Val Ser		
	245	250 255
Ile Arg Ile Leu Asp Glu Leu Val Leu Pro Phe Gln Glu Leu Gln Ile		
	260	265 270
Asp Asp Asn Glu Tyr Ala Tyr Leu Lys Ala Ile Ile Phe Phe Asp Pro		
	275	280 285
Asp Ala Lys Gly Leu Ser Asp Pro Gly Lys Ile Lys Arg Leu Arg Ser		
	290	295 300
Gln Val Gln Val Ser Leu Glu Asp Tyr Ile Asn Asp Arg Gln Tyr Asp		
	310	315 320
Ser Arg Gly Arg Phe Gly Glu Leu Leu Leu Leu Leu Pro Thr Leu Gln		
	325	330 335
Ser Ile Thr Trp Gln Met Ile Glu Gln Ile Gln Phe Ile Lys Leu Phe		
	340	345 350
Gly Met Ala Lys Ile Asp Asn Leu Leu Gln Glu Met Leu Leu Gly Gly		
	355	360 365
Ser Pro Ser Asp Ala Pro His Ala His His Pro Leu His Pro His Leu		
	370	375 380
Met Gln Glu His Met Gly Thr Asn Val Ile Val Ala Asn Thr Met Pro		
	385	390 395 400
Thr His Leu Ser Asn Gly Gln Met Cys Glu Trp Pro Arg Pro Arg Gly		
	405	410 415
Gln Ala Ala Thr Pro Glu Thr Pro Gln Pro Ser Pro Pro Gly Ala Ser		

	420		425		430	
Gly Ser Glu Pro Tyr Lys Leu Leu Pro Gly Ala Val Ala Thr Ile Val						
	435		440		445	
Lys Pro Leu Ser Ala Ile Pro Gln Pro Thr Ile Thr Lys Gln Glu Val						
	450		455		460	
Ile						
465						

<210> 65  
 <211> 1323  
 <212> DNA  
 <213> Homo sapiens

<400> 65  
 atggagcaga cgtatggcga ggtgaaccag ctgggcggtg tgttcgtcaa cggccgcccc 60  
 ctgcccacag ccatccgctt gcgcattgtg gagctggcgc agctgggcat ccgaccctgt 120  
 gacatcagtc ggcagctccg cgtatcccac ggctgcgtga gcaagatcct ggcgcgctac 180  
 aacgagaccg gctccattct gcccggggcc atcgggggga gcaagccccg cgtcaccact 240  
 cccaacgtgg tcaagcacat ccgggactac aagcaaggag accctggcat ctttgcctgg 300  
 gagatccgcg accggctgct ggccgacggc gtctgtgaca agtacaatgt gccttcggtg 360  
 agctccatca gccgcacact gcgcaacaag atcggcagcc tggcgagcc cggaccgtac 420  
 gaggcaagta agcagccgcc gtcgcagcct acgctgccct acaaccacat ctaccagtac 480  
 ccctacccca gtcccgtgtc gccacgggc gccaatgag gcagccaccc cgggggtccc 540  
 ggacacggcg gccacgtcag catcccgcgc tcatggccct cggcacactc ggtcagcaac 600  
 atcctgggca tccggacgtt tatggagcaa acagggggcc tggctgggag cgaaggcacc 660  
 gcttactctc ccaagatgga agactgggcc ggctgaacc gcacggcctt ccccgccacc 720  
 cccgcagtga atgggctaga gaaacctgcc ttagaggcag acattaaata cactcagtcg 780  
 gcctccaccc tctctgccgt gggcggtttt ctccccgcct gcgcctaccc ggcctccaac 840  
 cagcacggcg tgtacagcg cccgggcggc ggctacctcg ccccgggccc gccgtggccg 900  
 cctgcgcaag gtctctctct ggcgcccccc ggggcccggc tagctgtgca tggcggggaa 960  
 ctgcggcag caatgacctt caagcatccc agccgagaag gaagcctccc agtccggca 1020  
 gcaaggcccc ggacgcctc agtagcttac acggactgcc catcccggcc tcgacctct 1080

```

aggggcagct ctccccggac ccgagcccgg aggggaacggc aggcggaccc gggcgcacag 1140
gtctgcgcg cgccccggc aatcggcacg ggcaggatcg gaggactcgc ggaggaggaa 1200
gccagtgccg gcccgcgggg tgcacgcca gccagcccc aggccagcc ctgcctctgg 1260
ccggaccac cacacttctt ttattggtct gggtttttag gcttctctga acttgggttt 1320
tag 1323

```

```

<210> 66
<211> 440
<212> PRT
<213> Homo sapiens

```

```

<400> 66

```

```

Met Glu Gln Thr Tyr Gly Glu Val Asn Gln Leu Gly Gly Val Phe Val
1           5           10           15

```

```

Asn Gly Arg Pro Leu Pro Asn Ala Ile Arg Leu Arg Ile Val Glu Leu
20           25           30

```

```

Ala Gln Leu Gly Ile Arg Pro Cys Asp Ile Ser Arg Gln Leu Arg Val
35           40           45

```

```

Ser His Gly Cys Val Ser Lys Ile Leu Ala Arg Tyr Asn Glu Thr Gly
50           55           60

```

```

Ser Ile Leu Pro Gly Ala Ile Gly Gly Ser Lys Pro Arg Val Thr Thr
65           70           75           80

```

```

Pro Asn Val Val Lys His Ile Arg Asp Tyr Lys Gln Gly Asp Pro Gly
85           90           95

```

```

Ile Phe Ala Trp Glu Ile Arg Asp Arg Leu Leu Ala Asp Gly Val Cys
100          105          110

```

```

Asp Lys Tyr Asn Val Pro Ser Val Ser Ser Ile Ser Arg Ile Leu Arg
115          120          125

```

```

Asn Lys Ile Gly Ser Leu Ala Gln Pro Gly Pro Tyr Glu Ala Ser Lys
130          135          140

```

```

Gln Pro Pro Ser Gln Pro Thr Leu Pro Tyr Asn His Ile Tyr Gln Tyr
145          150          155          160

```

Pro Tyr Pro Ser Pro Val Ser Pro Thr Gly Ala Lys Met Gly Ser His  
 165 170 175

Pro Gly Val Pro Gly Thr Ala Gly His Val Ser Ile Pro Arg Ser Trp  
 180 185 190

Pro Ser Ala His Ser Val Ser Asn Ile Leu Gly Ile Arg Thr Phe Met  
 195 200 205

Glu Gln Thr Gly Ala Leu Ala Gly Ser Glu Gly Thr Ala Tyr Ser Pro  
 210 215 220

Lys Met Glu Asp Trp Ala Gly Val Asn Arg Thr Ala Phe Pro Ala Thr  
 225 230 235 240

Pro Ala Val Asn Gly Leu Glu Lys Pro Ala Leu Glu Ala Asp Ile Lys  
 245 250 255

Tyr Thr Gln Ser Ala Ser Thr Leu Ser Ala Val Gly Gly Phe Leu Pro  
 260 265 270

Ala Cys Ala Tyr Pro Ala Ser Asn Gln His Gly Val Tyr Ser Ala Pro  
 275 280 285

Gly Gly Gly Tyr Leu Ala Pro Gly Pro Pro Trp Pro Pro Ala Gln Gly  
 290 295 300

Pro Pro Leu Ala Pro Pro Gly Ala Gly Val Ala Val His Gly Gly Glu  
 305 310 315 320

Leu Ala Ala Ala Met Thr Phe Lys His Pro Ser Arg Glu Gly Ser Leu  
 325 330 335

Pro Ala Pro Ala Ala Arg Pro Arg Thr Pro Ser Val Ala Tyr Thr Asp  
 340 345 350

Cys Pro Ser Arg Pro Arg Pro Pro Arg Gly Ser Ser Pro Arg Thr Arg  
 355 360 365

Ala Arg Arg Glu Arg Gln Ala Asp Pro Gly Ala Gln Val Cys Ala Ala  
 370 375 380



Ala Pro Ala Ile Gly Thr Gly Arg Ile Gly Gly Leu Ala Glu Glu Glu  
385 390 395 400

Ala Ser Ala Gly Pro Arg Gly Ala Arg Pro Ala Ser Pro Gln Ala Gln  
405 410 415

Pro Cys Leu Trp Pro Asp Pro Pro His Phe Leu Tyr Trp Ser Gly Phe  
420 425 430

Leu Gly Phe Ser Glu Leu Gly Phe  
435 440

<210> 67  
<211> 416  
<212> DNA  
<213> Homo sapiens

<400> 67  
ttatcttaag agtctttatt taacacatat agtacacatt ttcagtcatt tcatcatcat 60  
ccaagtacat taagatacat acccatgtat attacaaggc ttattgttca ctcacatcat 120  
tccctttcta ctttaccttc tcattttcttg aagtctctat tctcattaat ttgttattta 180  
gttacagtcc tcttttcagt ttcttcagat ggggatatgc agatgataga ttcttggaat 240  
cctttctgca tccctttcac tctggcaggt gaatgatgct tggctggaaa gagacttctt 300  
ggttactttc cttttctctt aacaggtata gatatgattc cactgtctga taccagtcca 360  
attccttttc cattgcaaata aacttctttc tgtctggaat cttatatatt tttctc 416

<210> 68  
<211> 108  
<212> PRT  
<213> Homo sapiens

<400> 68

Met Tyr Ile Thr Arg Leu Ile Val His Ser Ser Ser Ser Leu Ser Thr  
1 5 10 15

Leu Pro Ser His Phe Leu Lys Ser Leu Phe Ser Leu Ile Cys Tyr Leu  
20 25 30

Val Thr Val Leu Phe Ser Val Ser Ser Asp Gly Asp Met Gln Met Ile  
35 40 45

Asp Ser Trp Asn Pro Phe Cys Ile Pro Phe Thr Leu Ala Gly Glu Leu  
50 55 60

Ala Gly Lys Arg Leu Leu Gly Tyr Phe Pro Phe Leu Leu Thr Gly Ile  
65 70 75 80

Asp Met Ile Pro Leu Ser Asp Thr Ser Pro Ile Leu Phe Pro Leu Gln  
85 90 95

Ile Thr Ser Phe Cys Leu Glu Ser Tyr Ile Phe Phe  
100 105

<210> 69  
<211> 2595  
<212> DNA  
<213> Homo sapiens

<400> 69  
aatgcaagaa tgaactcctt cctggaatac ccataactta gcagtggcga ctcggggacc 60  
tgctcagccc gagcctaccc ctcggaacctt aggtattaca cttccagtc gtgcgcggtc 120  
agcgccaaca gttgcggcgg cgacgaccgc ttcctagtgg gcaggggggt gcagatcggt 180  
tcgccccacc accaccacca ccaccacctt caccaccccc agccggctac ctaccagact 240  
tccgggaacc tgggggtgtc ctactccac tcaagttgtg gtccaagcta tggtcacag 300  
aacttcagtg cgccttacag ccctacgcg ttaaatacagg aagcagacgt aagtgggtggg 360  
taccoccatg gcgctccgc tgtttactct ggaaatctct catctcccat ggtccagcat 420  
caccaccacc accaggggta tgctgggggc gcggtgggct cgcctcaata cattcaccac 480  
tcatatggac aggagcacca gagcctggcc ctggctacgt ataataactc cttgtccctt 540  
ctccacgcca gccaccaaga agcctgtcgc tccccgcct cggagacatc ttctccagcg 600  
cagacttttg actggatgaa agtcaaaaga aaccctccca aaacaggtca gtcctgctgg 660  
ttggtggatg ctcttgatt attctggaag gagctggtat gcttaatttc caaggaaatt 720  
aataatgac ttttttttaa aaggcttttg tatcagacta gtgtttagt gcatggagag 780  
ggtgcccaga ggtgttggg caaagaagtc tcagggattg gtgtgttttc aaggatttta 840  
tacatttggg aaataggaag tatgtggggg tggttattgt gacggtagtg ttctgttaat 900  
atcttgaggc tccattaatc accggtctga ccatgctaag ggtttacatc aggttaacac 960  
tttacacctc atcactcacc ctccacagcc cgatttgtgc tgagttcttg atcttttctt 1020

tacctgagtg ttgccatgaa gcgtgtggg aatctcaagt cgatttaaaa atttttacat 1080  
 ttccgtctca tggcttccca ctttgcccca ggggaaagt ggagagtacg gctacctggg 1140  
 tcaacccaac gcggtgcga ccaacttcac taccaagcag ctcacggaac tggagaagga 1200  
 gttccacttc aacaagtacc tgacgcgcgc ccgcagggtg gagatcgctg catccctgca 1260  
 gctcaacgag acccaagtga agatctggtt ccagaaccgc cgaatgaagc aaaagaaacg 1320  
 tgagaaggag ggtctcttgc ccatctctcc ggccaccccg ccaggaaacg acgagaaggc 1380  
 cgaggaatcc tcagagaagt ccagctcttc gccctgcgtt ccttccccgg ggtcttctac 1440  
 ctgagacact ctgactacct ccactgagg cggtccagc ccagacaac agcccaggca 1500  
 tctccttggg ctgggacttc ttacccaaag cacatgctta gcttatcttt ctttccattt 1560  
 acagtctctt tcttctttc taatcctatc tggggagctc ctggccagga taatatattt 1620  
 gcagataatt ctggaccaga gacttggtgc ggggttaaca ccttcatcca gattgggtgc 1680  
 cagcatacat tttctggtgg gccttaacat cctcctgct tttaggagaa ttcacagaac 1740  
 ctactgttcc tttcagatga ccttttgaa aatagttccc tttgccaaca gaaacatgcc 1800  
 agaaggaatg ttctcatctt ttttatctaa ctatatgtac agctctcccc tcccttgtcc 1860  
 ttgaaagtag gatatagcga aaggcgagtc caggagctca ggaagaagag atgcactata 1920  
 tgtttacaca attaatcat cccttaattt aagtcatttt catgtgtgtg agtttgctgg 1980  
 ttgtaaatac tttgtcctaa gagatttatc ttatacaga ttttctagaa atgtttaggt 2040  
 tactaaaaca ggggtggcaa actctctaaa ctggtacaat tttatagggtg aaagaaaaaa 2100  
 ttccctcatt taaacccaat cagatgcctc agagggtagc cttgatttgt tcttacagtt 2160  
 aagaagccct gcagagcaca aacttcagaa acccggttc ctgtgctaag tctttcccaa 2220  
 tctctacccc tttcttctcg ggccaccctc tgtttaaaat ttgtgctggg ttattcagaa 2280  
 cctaaaagta ttattcaaac caatttcttc ctccacagt tatcttagct ggatataatg 2340  
 tattttcagc tcaattgtta atgtgatgga tggcacaatg aatgtatatt ttgtgttatt 2400  
 cgtgaatagt cttttgcatg tcgcacaatg tttgatgtcc ccaaagtacc aactgagtt 2460  
 ctatcagtta tcctttgtga gcctatgata ttccccattt cctgtacaat catgaacagc 2520  
 tctgagatcc tggagtgata tgatccagag cagagtttac gggctctagg atgtctgtaa 2580  
 taaataaata tactc 2595

&lt;210&gt; 70

<211> 330  
 <212> PRT  
 <213> Homo sapiens

<400> 70

Met Asn Ser Phe Leu Glu Tyr Pro Ile Leu Ser Ser Gly Asp Ser Gly  
 1 5 10 15

Thr Cys Ser Ala Arg Ala Tyr Pro Ser Asp His Arg Ile Thr Thr Phe  
 20 25 30

Gln Ser Cys Ala Val Ser Ala Asn Ser Cys Gly Gly Asp Asp Arg Phe  
 35 40 45

Leu Val Gly Arg Gly Val Gln Ile Gly Ser Pro His His His His His  
 50 55 60

His His His His His Pro Gln Pro Ala Thr Tyr Gln Thr Ser Gly Asn  
 65 70 75 80

Leu Gly Val Ser Tyr Ser His Ser Ser Cys Gly Pro Ser Tyr Gly Ser  
 85 90 95

Gln Asn Phe Ser Ala Pro Tyr Ser Pro Tyr Ala Leu Asn Gln Glu Ala  
 100 105 110

Asp Val Ser Gly Gly Tyr Pro Gln Cys Ala Pro Ala Val Tyr Ser Gly  
 115 120 125

Asn Leu Ser Ser Pro Met Val Gln His His His His His Gln Gly Tyr  
 130 135 140

Ala Gly Gly Ala Val Gly Ser Pro Gln Tyr Ile His His Ser Tyr Gly  
 145 150 155 160

Gln Glu His Gln Ser Leu Ala Leu Ala Thr Tyr Asn Asn Ser Leu Ser  
 165 170 175

Pro Leu His Ala Ser His Gln Glu Ala Cys Arg Ser Pro Ala Ser Glu  
 180 185 190

Thr Ser Ser Pro Ala Gln Thr Phe Asp Trp Met Lys Val Lys Arg Asn  
 195 200 205

Pro Pro Lys Thr Gly Lys Val Gly Glu Tyr Gly Tyr Leu Gly Gln Pro  
 210 215 220

Asn Ala Val Arg Thr Asn Phe Thr Thr Lys Gln Leu Thr Glu Leu Glu  
 225 230 235 240

Lys Glu Phe His Phe Asn Lys Tyr Leu Thr Arg Ala Arg Arg Val Glu  
 245 250 255

Ile Ala Ala Ser Leu Gln Leu Asn Glu Thr Gln Val Lys Ile Trp Phe  
 260 265 270

Gln Asn Arg Arg Met Lys Gln Lys Lys Arg Glu Lys Glu Gly Leu Leu  
 275 280 285

Pro Ile Ser Pro Ala Thr Pro Pro Gly Asn Asp Glu Lys Ala Glu Glu  
 290 295 300

Ser Ser Glu Lys Ser Ser Ser Ser Pro Cys Val Pro Ser Pro Gly Ser  
 305 310 315 320

Ser Thr Ser Asp Thr Leu Thr Thr Ser His  
 325 330

<210> 71  
 <211> 222  
 <212> PRT  
 <213> Homo sapiens

<400> 71

Met Asn Ser Phe Leu Glu Tyr Pro Ile Leu Ser Ser Gly Asp Ser Gly  
 1 5 10 15

Thr Cys Ser Ala Arg Ala Tyr Pro Ser Asp His Arg Ile Thr Thr Phe  
 20 25 30

Gln Ser Cys Ala Val Ser Ala Asn Ser Cys Gly Gly Asp Asp Arg Phe  
 35 40 45

Leu Val Gly Arg Gly Val Gln Ile Gly Ser Pro His His His His His  
 50 55 60

His His His His His Pro Gln Pro Ala Thr Tyr Gln Thr Ser Gly Asn  
65 70 75 80

Leu Gly Val Ser Tyr Ser His Ser Ser Cys Gly Pro Ser Tyr Gly Ser  
85 90 95

Gln Asn Phe Ser Ala Pro Tyr Ser Pro Tyr Ala Leu Asn Gln Glu Ala  
100 105 110

Asp Val Ser Gly Gly Tyr Pro Gln Cys Ala Pro Ala Val Tyr Ser Gly  
115 120 125

Asn Leu Ser Ser Pro Met Val Gln His His His His His Gln Gly Tyr  
130 135 140

Ala Gly Gly Ala Val Gly Ser Pro Gln Tyr Ile His His Ser Tyr Gly  
145 150 155 160

Gln Glu His Gln Ser Leu Ala Leu Ala Thr Tyr Asn Asn Ser Leu Ser  
165 170 175

Pro Leu His Ala Ser His Gln Glu Ala Cys Arg Ser Pro Ala Ser Glu  
180 185 190

Thr Ser Ser Pro Ala Gln Thr Phe Asp Trp Met Lys Val Lys Arg Asn  
195 200 205

Pro Pro Lys Thr Gly Gln Ser Cys Trp Leu Val Asp Ala Pro  
210 215 220

<210> 72

<211> 132

<212> PRT

<213> Homo sapiens

<400> 72

Met Asn Ser Phe Leu Glu Tyr Pro Ile Leu Ser Ser Gly Asp Ser Gly  
1 5 10 15

Thr Cys Ser Ala Arg Ala Tyr Pro Ser Asp His Arg Ile Thr Thr Phe  
20 25 30

Gln Ser Cys Ala Val Ser Ala Asn Ser Cys Gly Gly Asp Asp Arg Phe

35                                      40                                      45  
 Leu Val Gly Arg Gly Val Gln Ile Gly Ser Pro His His His His His  
 50                                      55                                      60  
 His His His His His Pro Gln Pro Ala Thr Tyr Gln Thr Ser Gly Asn  
 65                                      70                                      75                                      80  
 Leu Gly Val Ser Tyr Ser His Ser Ser Cys Gly Pro Ser Tyr Gly Ser  
 85                                      90                                      95  
 Gln Asn Phe Ser Ala Pro Tyr Ser Pro Tyr Ala Leu Asn Gln Glu Ala  
 100                                      105                                      110  
 Asp Pro Pro Arg Ser Leu Ser Leu Pro Arg Ile Gly Asp Ile Phe Ser  
 115                                      120                                      125  
 Ser Ala Asp Phe  
 130

<210> 73  
 <211> 368  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (271)..(271)  
 <223> n = 'unknown'

<400> 73  
 gaataaccagg gactcagcca gagaagaaag tactgttttt aaataaacag ctccctggcag 60  
 ctcttttattc tagtccacat tattcagata tcttcttttt tctctctttt ctttccatgt 120  
 gtttgaggaaa atttttccag gatgttttca gatgagtttg tgaacaatgg ccctagagta 180  
 ttctgttttt ttccccttga agcttctgtg acctgaagca tagattactt ttatgcattg 240  
 gcttggtgct gagtttattc aatggtgcga nggtgtgttt aatgcagtct ccacagaaca 300  
 tctccagaac aacctcacag attgaattcc aggttctctca caggaagagg agggaccagg 360  
 ctccctccc 368

<210> 74  
 <211> 52

<212> PRT  
 <213> Homo sapiens

<220>  
 <221> MISC\_FEATURE  
 <222> (20)..(20)  
 <223> X = unknown

<400> 74

Leu Lys His Arg Leu Leu Leu Cys Ile Gly Leu Leu Leu Ser Leu Phe  
 1 5 10 15

Asn Gly Ala Xaa Cys Cys Leu Met Gln Ser Pro Gln Asn Ile Ser Arg  
 20 25 30

Thr Thr Ser Gln Ile Glu Phe Gln Val Pro His Arg Lys Arg Arg Asp  
 35 40 45

Gln Ala Pro Pro  
 50

<210> 75  
 <211> 2447  
 <212> DNA  
 <213> Homo sapiens

<400> 75

tccacgagaa aatccacag tggaaactct taagcctctg cgaagtaaatt cattcttgtg 60  
 aatgtgacac acgatctctc cagtttccat atgttgagat tctacttatt catcagtttg 120  
 ttgtgcttgt caagatcaga cgcagaagaa acatgtcctt cattcaccag gctgagcttt 180  
 cacagtgcag tggttggtac gggactaaat gtgaggctga tgctctacac aaggaaaaac 240  
 ctgacctgcg cacaacccat caactcctca gcttttggga acttgaatgt gaccaagaaa 300  
 accaccttca ttgtccatgg attcaggcca acaggctccc ctctggttg gatggatgac 360  
 ttagtaaagg gtttgctctc tgttgaagac atgaacgtag ttgttgttga ttggaatcga 420  
 ggagctacaa ctttaatatata taccatgcc tctagtaaga ccagaaaagt agccatgggc 480  
 ttgaaggaat ttattgacca gatgttgga gaaggagctt ctcttgatga catttacatg 540  
 atcggagtaa gtctaggagc ccacatatct gggtttgttg gagagatgta cgatggatgg 600  
 ctggggagaa ttacaggcct cgaccctgca ggccttttat tcaacgggaa acctaccaa 660  
 gacagattag atcccagtga tgcgcagttt gttgatgtca tccattccga cactgatgca 720



ctgggctaca	aggagccatt	aggaaacata	gacttctacc	caaatggagg	attggatcaa	780
cctggctgcc	ccaaaacaat	attgggagga	tttcagtatt	ttaaatgtga	ccaccagagg	840
tctgtatacc	tgtacctgtc	ttccctgaga	gagagctgca	ccatcactgc	gtatccctgt	900
gactcctacc	aggattatag	gaatggcaag	tgtgtcagct	gcggcacgtc	acaaaaagag	960
tcctgtcccc	ttctgggcta	ttatgctgat	aattggaaag	accatctaag	ggggaaagat	1020
cctccaatga	cgaaggcatt	ctttgacaca	gctgaggaga	gcccattctg	catgtatcat	1080
tactttgtgg	atattataac	atggaacaag	aatgtaagaa	gaggggacat	taccatcaaa	1140
ttgagagaca	aagctggaaa	caccacagaa	tccaaaatca	atcatgaacc	caccacatth	1200
cagaaatata	accaagttag	tctacttgca	agatttaata	aagatctgga	taaagtggct	1260
gcaatttcct	tgatgttctc	tacaggatct	ctaataggcc	caagggtacaa	gctcaggatt	1320
ctccgaatga	agttaaggtc	ccttgcccat	ccggagaggc	ctcagctgtg	tcggtatgat	1380
cttgtcctga	tggaaaacgt	tgaacagtc	ttccaaccta	ttctttgccc	agagttgcag	1440
ttgtaactgt	tgccaggaca	catggccata	aataatagaa	agaaagctac	aaccacaggc	1500
tgtttgaaag	cttcaccta	cctttctgca	aagcagaaaa	agtatgaaaa	aaccaaggct	1560
tttttcagta	gcgtcctatg	gatgtcacat	tgtacatcaa	acaaccttgt	gattataaaa	1620
cgatcctggg	aaggagcccc	taactagggc	aagtcagaaa	tagccaggct	cgcagcagcg	1680
cagcgtgtg	tctgctgtgt	cctggggcct	cccttggtcc	gacctgtcaa	ttctgctgcc	1740
tgtcacgcgg	gtggttctgc	ccatcgcggc	tgcggtcaa	gcatcttcaa	gggaaggacg	1800
gactggaggc	ctcacctgtg	actcaactct	gcattctccg	tgccacattc	ctccagttcc	1860
cacacgtaga	agggaaacgaa	actgacgtct	acctcatggg	gctgctgtgt	gggtttggga	1920
ggcaaaaatc	tatgaagggt	tttttgaaat	cccataggtg	ccacatctat	gagatgtttg	1980
ataaatgtga	atatgctttt	acatttgggc	ttatctaatt	tgcaataaga	gagcctctct	2040
ctatcaacac	cagcttctct	ctcgggctgt	ttgctcaggg	aaggcaagaa	agccacgtgc	2100
tggccctctg	ccttctctaa	agtgtgtgtg	gagcatggag	gagctggagg	agatggggat	2160
ggactgacag	ctaagagggc	ggctgctggg	actagatagt	ggatgaagaa	agaaggacga	2220
ggaagccgtg	gggcagcctc	ttcacatggg	gacaggggat	ggagcatgag	gcaggggaag	2280
gaaaagcaga	gcttattttt	cacctaaggt	ggagaaggat	cactttacag	gcaacgctca	2340
ttttaagcaa	cccttaagaa	atgtttatgt	ttctttatta	ccaatgtaat	ctatgattat	2400

tgaaggaaat ttagaaaatg cgtagataca aaaaaaaaaa aaaaaaa

2447

<210> 76  
 <211> 451  
 <212> PRT  
 <213> Homo sapiens

<400> 76

Met Leu Arg Phe Tyr Leu Phe Ile Ser Leu Leu Cys Leu Ser Arg Ser  
 1 5 10 15

Asp Ala Glu Glu Thr Cys Pro Ser Phe Thr Arg Leu Ser Phe His Ser  
 20 25 30

Ala Val Val Gly Thr Gly Leu Asn Val Arg Leu Met Leu Tyr Thr Arg  
 35 40 45

Lys Asn Leu Thr Cys Ala Gln Thr Ile Asn Ser Ser Ala Phe Gly Asn  
 50 55 60

Leu Asn Val Thr Lys Lys Thr Thr Phe Ile Val His Gly Phe Arg Pro  
 65 70 75 80

Thr Gly Ser Pro Pro Val Trp Met Asp Asp Leu Val Lys Gly Leu Leu  
 85 90 95

Ser Val Glu Asp Met Asn Val Val Val Val Asp Trp Asn Arg Gly Ala  
 100 105 110

Thr Thr Leu Ile Tyr Thr His Ala Ser Ser Lys Thr Arg Lys Val Ala  
 115 120 125

Met Val Leu Lys Glu Phe Ile Asp Gln Met Leu Ala Glu Gly Ala Ser  
 130 135 140

Leu Asp Asp Ile Tyr Met Ile Gly Val Ser Leu Gly Ala His Ile Ser  
 145 150 155 160

Gly Phe Val Gly Glu Met Tyr Asp Gly Trp Leu Gly Arg Ile Thr Gly  
 165 170 175

Leu Asp Pro Ala Gly Pro Leu Phe Asn Gly Lys Pro His Gln Asp Arg  
 180 185 190

Leu Asp Pro Ser Asp Ala Gln Phe Val Asp Val Ile His Ser Asp Thr  
 195 200 205

Asp Ala Leu Gly Tyr Lys Glu Pro Leu Gly Asn Ile Asp Phe Tyr Pro  
 210 215 220

Asn Gly Gly Leu Asp Gln Pro Gly Cys Pro Lys Thr Ile Leu Gly Gly  
 225 230 235 240

Phe Gln Tyr Phe Lys Cys Asp His Gln Arg Ser Val Tyr Leu Tyr Leu  
 245 250 255

Ser Ser Leu Arg Glu Ser Cys Thr Ile Thr Ala Tyr Pro Cys Asp Ser  
 260 265 270

Tyr Gln Asp Tyr Arg Asn Gly Lys Cys Val Ser Cys Gly Thr Ser Gln  
 275 280 285

Lys Glu Ser Cys Pro Leu Leu Gly Tyr Tyr Ala Asp Asn Trp Lys Asp  
 290 295 300

His Leu Arg Gly Lys Asp Pro Pro Met Thr Lys Ala Phe Phe Asp Thr  
 305 310 315 320

Ala Glu Glu Ser Pro Phe Cys Met Tyr His Tyr Phe Val Asp Ile Ile  
 325 330 335

Thr Trp Asn Lys Asn Val Arg Arg Gly Asp Ile Thr Ile Lys Leu Arg  
 340 345 350

Asp Lys Ala Gly Asn Thr Thr Glu Ser Lys Ile Asn His Glu Pro Thr  
 355 360 365

Thr Phe Gln Lys Tyr His Gln Val Ser Leu Leu Ala Arg Phe Asn Gln  
 370 375 380

Asp Leu Asp Lys Val Ala Ala Ile Ser Leu Met Phe Ser Thr Gly Ser  
 385 390 395 400

Leu Ile Gly Pro Arg Tyr Lys Leu Arg Ile Leu Arg Met Lys Leu Arg  
 405 410 415

Ser Leu Ala His Pro Glu Arg Pro Gln Leu Cys Arg Tyr Asp Leu Val  
 420 425 430

Leu Met Glu Asn Val Glu Thr Val Phe Gln Pro Ile Leu Cys Pro Glu  
 435 440 445

Leu Gln Leu  
 450

<210> 77  
 <211> 2482  
 <212> DNA  
 <213> Homo sapiens

<400> 77  
 agagcctggc caccagtggt ctccaccgcc ctgatggatc cactgaatct gtcctggtat 60  
 gatgatgatc tggagaggca gaactggagc cggcccttca acgggtcaga cgggaaggcg 120  
 gacagacccc actacaacta ctatgccaca ctgctcaccg tgctcatcgc tgtcatcgtc 180  
 ttccggcaacg tgctgggtgtg catggctgtg tcccgcgaga aggcgctgca gaccaccacc 240  
 aactacctga tcgtcagcct cgagtggtgc gacctctctg tcgccacact ggtcatgccc 300  
 tgggttgtct acctggaggt ggtaggtgag tggaaattca gcaggattca ctgtgacatc 360  
 ttctgtcactc tggacgtcat gatgtgcacg gcgagcatcc tgaacttgtg tgccatcagc 420  
 atcgacaggt acacagctgt ggccatgccc atgctgtaca atacgcgcta cagctccaag 480  
 cgccgggtca ccgtcatgat ctccatcgtc tgggtctctg ccttcacat ctctgccc 540  
 ctctctctcg gactcaataa cgcagaccag aacgagtga tcattgccaa cccggccttc 600  
 gtggtctact cctccatcgt ctcttctac gtgcccttca ttgtcaccct gctggtctac 660  
 atcaagatct acattgtcct ccgcagagcg cgcaagcgag tcaacaccaa acgcagcagc 720  
 cgagctttca gggccacct gagggctcca cttaaaggga actgtactca cccgaggagc 780  
 atgaaactct gcaccgttat catgaagtct aatgggagtt tcccagtgaa caggcggaga 840  
 gtggaggctg cccggcgagc ccaggagctg gagatggaga tgctctccag caccagccca 900  
 cccgagagga cccggtacag ccccatccca cccagccacc accagctgac tctccccgac 960  
 ccgtcccacc atggtctcca cagcactccc gacagccccg ccaaaccaga gaagaatggg 1020  
 catgccaaag accaccccaa gattgccaag atctttgaga tccagaccat gcccaatggc 1080  
 aaaacccgga cctccctcaa gaccatgagc cgtaggaagc tctcccagca gaaggagaag 1140

```

aaagccactc agatgctcgc cattgttctc ggcgtgttca tcatctgctg gctgcccttc 1200
ttcatcacac acatcctgaa catacactgt gactgcaaca tcccgcctgt cctgtacagc 1260
gccttcacgt ggctgggcta tgtcaacagc gccgtgaacc ccatcatcta caccaccttc 1320
aacgttgagt tccgcaaggc cttcctgaag atcctccact gctgactctg ctgcctgccc 1380
gcacagcagc ctgcttccca cctccctgcc caggccggcc agcctcacc cttggaaccg 1440
tgagcaggaa ggctgggtg gatcgccctc ctcttcttag ccccggcagg ccctgcagtg 1500
ttcgcttggc tccatgctcc tctactgccg cacaccctca ctctgccagg gcagtgctag 1560
tgagctgggc atggtaccag ccctggggct ggccccagct caggggcagc tcatagagtc 1620
ccccctccca cctccagtcc ccctatcctt ggacacaaag atgcagccgc cttccttgac 1680
cttcctctgg ggctctaggg ttgctggagc ctgagtcagg gccagaggc tgagttttct 1740
ctttgtgggg ctggcggtg agcaggcggg ggggagagat ggacagttca caccctgcaa 1800
ggcccacagg aggcaagcaa gctctcttgc cgaggagcca ggcaacttca gtcctgggag 1860
acccatgtaa ataccagact gcagggttga cccgagagat tccaagcca aaaaccttag 1920
ctccctcccg caccctgatg tggacctcta ctttcaggc tagtccggac ccacctcacc 1980
ccgttacagc tccccagtg gtttccacat gctctgagaa gaggagccct catcttgaag 2040
ggcccaggag ggtctatggg gagaggaaact ccttggccta gccaccctg ctgccttctg 2100
acggccctgc aatgtatccc ttctcacagc acatgctggc cagcctgggg cctggcaggg 2160
aggtcaggcc ctggaactct atctgggcct gggctaggga catcagaggt tctttgaggg 2220
actgcctctg ccacactctg acgcaaaacc actttcctt tctattcctt ctggcctttc 2280
ctctctcctg tttcccttcc cttccactgc ctctgcctta gaggagcca cggctaagag 2340
gctgctgaaa accatctggc ctggcctggc cctgccctga ggaaggaggg gaagctgcag 2400
cttgggagag cccctggggc ctagactctg taacatcact atccgatgca ccaaactaat 2460
aaaactttga cgagtcacct tc 2482

```

```

<210> 78
<211> 443
<212> PRT
<213> Homo sapiens

```

```

<400> 78

```

```

Met Asp Pro Leu Asn Leu Ser Trp Tyr Asp Asp Asp Leu Glu Arg Gln
1          5          10          15

```

Asn Trp Ser Arg Pro Phe Asn Gly Ser Asp Gly Lys Ala Asp Arg Pro  
 20 25 30  
 His Tyr Asn Tyr Tyr Ala Thr Leu Leu Thr Leu Leu Ile Ala Val Ile  
 35 40 45  
 Val Phe Gly Asn Val Leu Val Cys Met Ala Val Ser Arg Glu Lys Ala  
 50 55 60  
 Leu Gln Thr Thr Thr Asn Tyr Leu Ile Val Ser Leu Ala Val Ala Asp  
 65 70 75 80  
 Leu Leu Val Ala Thr Leu Val Met Pro Trp Val Val Tyr Leu Glu Val  
 85 90 95  
 Val Gly Glu Trp Lys Phe Ser Arg Ile His Cys Asp Ile Phe Val Thr  
 100 105 110  
 Leu Asp Val Met Met Cys Thr Ala Ser Ile Leu Asn Leu Cys Ala Ile  
 115 120 125  
 Ser Ile Asp Arg Tyr Thr Ala Val Ala Met Pro Met Leu Tyr Asn Thr  
 130 135 140  
 Arg Tyr Ser Ser Lys Arg Arg Val Thr Val Met Ile Ser Ile Val Trp  
 145 150 155 160  
 Val Leu Ser Phe Thr Ile Ser Cys Pro Leu Leu Phe Gly Leu Asn Asn  
 165 170 175  
 Ala Asp Gln Asn Glu Cys Ile Ile Ala Asn Pro Ala Phe Val Val Tyr  
 180 185 190  
 Ser Ser Ile Val Ser Phe Tyr Val Pro Phe Ile Val Thr Leu Leu Val  
 195 200 205  
 Tyr Ile Lys Ile Tyr Ile Val Leu Arg Arg Arg Arg Lys Arg Val Asn  
 210 215 220  
 Thr Lys Arg Ser Ser Arg Ala Phe Arg Ala His Leu Arg Ala Pro Leu  
 225 230 235 240

Lys Gly Asn Cys Thr His Pro Glu Asp Met Lys Leu Cys Thr Val Ile  
 245 250 255  
 Met Lys Ser Asn Gly Ser Phe Pro Val Asn Arg Arg Arg Val Glu Ala  
 260 265 270  
 Ala Arg Arg Ala Gln Glu Leu Glu Met Glu Met Leu Ser Ser Thr Ser  
 275 280 285  
 Pro Pro Glu Arg Thr Arg Tyr Ser Pro Ile Pro Pro Ser His His Gln  
 290 295 300  
 Leu Thr Leu Pro Asp Pro Ser His His Gly Leu His Ser Thr Pro Asp  
 305 310 315 320  
 Ser Pro Ala Lys Pro Glu Lys Asn Gly His Ala Lys Asp His Pro Lys  
 325 330 335  
 Ile Ala Lys Ile Phe Glu Ile Gln Thr Met Pro Asn Gly Lys Thr Arg  
 340 345 350  
 Thr Ser Leu Lys Thr Met Ser Arg Arg Lys Leu Ser Gln Gln Lys Glu  
 355 360 365  
 Lys Lys Ala Thr Gln Met Leu Ala Ile Val Leu Gly Val Phe Ile Ile  
 370 375 380  
 Cys Trp Leu Pro Phe Phe Ile Thr His Ile Leu Asn Ile His Cys Asp  
 385 390 395 400  
 Cys Asn Ile Pro Pro Val Leu Tyr Ser Ala Phe Thr Trp Leu Gly Tyr  
 405 410 415  
 Val Asn Ser Ala Val Asn Pro Ile Ile Tyr Thr Thr Phe Asn Ile Glu  
 420 425 430  
 Phe Arg Lys Ala Phe Leu Lys Ile Leu His Cys  
 435 440

<210> 79  
 <211> 659  
 <212> DNA  
 <213> Homo sapiens

<400> 79  
 tgcagggggg gggaaaagtt gggagtgaca ccagagcctt ctgcaagatg cttctgattc 60  
 tgctgtcagt ggccctgctg gccttcagct cagctcagga cttagatgaa gatgtcagcc 120  
 aagaagacgt tcccttggtg atatcagatg gaggagactc tgagcagttc atagatgagg 180  
 agcgtcaggg accacctttg ggaggacagc aatctcaacc ctctgctggt gatgggaacc 240  
 agaatgatgg ccctcagcag ggaccacccc aacaaggagg ccagcagcaa caaggtccac 300  
 cacctcctca gggaaagcca caaggaccac cccaacaggg aggccatccc cctcctcctc 360  
 aaggaaggcc acaaggacca cccaacaggg gaggccatcc ccgtcctcct cgaggaaggc 420  
 cacaaggacc accccaacag ggaggccatc agcaagggtc tccccacct cctcctggaa 480  
 agccccaggg accacctccc caagggggcc gccacaagg acctccacag gggcagtctc 540  
 ctcagtaatc taggattcaa tgacaggaag tgaataagaa gatgacagtg tttcaaattg 600  
 cttgaaacat aatgtgatca tgctctaact tcaatatacc aataaaataa tcagcttgc 659

<210> 80  
 <211> 166  
 <212> PRT  
 <213> Homo sapiens

<400> 80

Met Leu Leu Ile Leu Leu Ser Val Ala Leu Leu Ala Phe Ser Ser Ala  
 1 5 10 15

Gln Asp Leu Asp Glu Asp Val Ser Gln Glu Asp Val Pro Leu Val Ile  
 20 25 30

Ser Asp Gly Gly Asp Ser Glu Gln Phe Ile Asp Glu Glu Arg Gln Gly  
 35 40 45

Pro Pro Leu Gly Gly Gln Gln Ser Gln Pro Ser Ala Gly Asp Gly Asn  
 50 55 60

Gln Asn Asp Gly Pro Gln Gln Gly Pro Pro Gln Gln Gly Gly Gln Gln  
 65 70 75 80

Gln Gln Gly Pro Pro Pro Pro Gln Gly Lys Pro Gln Gly Pro Pro Gln  
 85 90 95

Gln Gly Gly His Pro Pro Pro Pro Gln Gly Arg Pro Gln Gly Pro Pro



100

105

110

Gln Gln Gly Gly His Pro Arg Pro Pro Arg Gly Arg Pro Gln Gly Pro  
 115 120 125

Pro Gln Gln Gly Gly His Gln Gln Gly Pro Pro Pro Pro Pro Gly  
 130 135 140

Lys Pro Gln Gly Pro Pro Pro Gln Gly Gly Arg Pro Gln Gly Pro Pro  
 145 150 155 160

Gln Gly Gln Ser Pro Gln  
 165

<210> 81  
 <211> 574  
 <212> DNA  
 <213> Homo sapiens

<400> 81  
 aggttctgag agctgtgttg tctgcgtgca catgggtgag ccggaaagga gacctgcaga 60  
 gaatgaaaca gacacataaa ggaaagcctc ccagcagcat ggctttcacc ggcaagttcg 120  
 agatggagag tgagaagaat tatgatgagt tcatgaagct ccttgggatc tccagcgatg 180  
 taatcgaaaa ggcccacaac ttcaagatcg tcacggaggt gcagcaggat gggcaggact 240  
 tcacttggtc ccagcactac tacggggggc acaccatgac caacaagttc actgttggca 300  
 aggaaagcaa catacagaca atggggggca agacgttcaa ggccactgtg cagatggagg 360  
 gcgggaagct ggtggtgaat ttccccaact atcaccagac ctacagagatc gtgggtgaca 420  
 agctggtgga ggtctccacc atcggaggcg tgacctatga gcgcgtgagc aagagactgg 480  
 cctaagcagc caggcccggc ccaggagct acaaaccac caataaaact gatataagga 540  
 cagacgctaa aaaaaaagaa aaaaaaaaaa aaaa 574

<210> 82  
 <211> 128  
 <212> PRT  
 <213> Homo sapiens

<400> 82

Met Ala Phe Thr Gly Lys Phe Glu Met Glu Ser Glu Lys Asn Tyr Asp  
 1 5 10 15

Glu Phe Met Lys Leu Leu Gly Ile Ser Ser Asp Val Ile Glu Lys Ala  
                   20                  25                  30

His Asn Phe Lys Ile Val Thr Glu Val Gln Gln Asp Gly Gln Asp Phe  
           35                  40                  45

Thr Trp Ser Gln His Tyr Tyr Gly Gly His Thr Met Thr Asn Lys Phe  
       50                  55                  60

Thr Val Gly Lys Glu Ser Asn Ile Gln Thr Met Gly Gly Lys Thr Phe  
   65                  70                  75                  80

Lys Ala Thr Val Gln Met Glu Gly Gly Lys Leu Val Val Asn Phe Pro  
                   85                  90                  95

Asn Tyr His Gln Thr Ser Glu Ile Val Gly Asp Lys Leu Val Glu Val  
                   100                  105                  110

Ser Thr Ile Gly Gly Val Thr Tyr Glu Arg Val Ser Lys Arg Leu Ala  
           115                  120                  125

<210> 83  
 <211> 1942  
 <212> DNA  
 <213> Homo sapiens

<400> 83  
 ggcacgaggg acttcctccc agcacattcc tgcactctgc cgtgtccaca ctgccccaca 60  
 gacccagtcc tccaagcctg ctgccagctc cctgcaagcc cctcagggtg ggccttgcca 120  
 cgggtgccagc aggcagccct gggctggggg taggggactc cctacaggca cgcagccctg 180  
 agacctcaga gggccacccc ttgagggtgg ccaggccccc agtggccaac ctgagtgtgt 240  
 cctctgccac cagccctgct ggcccctggt tccgctggcc cccagatgc ctggctgaga 300  
 cacgccagtg gcctcagctg cccacacctc ttcccggccc ctgaagttgg cactgcagca 360  
 gacagctccc tgggcaccag gcagctaaca gacacagccg ccagcccaaa cagcagcggc 420  
 atgggcagcg ccagcccggg tctgagcagc gtatcccca gccacctcct gctgcccccc 480  
 gacacggtgt cgcgacagc cttggagaag gcggcagcgg gggcagtggg tctogagaga 540  
 cgggactgga gtcccagtcc acccgccacg cccgagcagg gcctgtccgc cttctacctc 600  
 tcctactttg acatgctgta ccctgaggac agcagctggg cagccaaggc ccctggggcc 660

```

agcagtcggg aggagccacc tgaggagcct gagcagtgcc cggtcattga cagccaagcc 720
ccagcgggca gcctggactt ggtgcccggc gggctgacct tggaggagca ctcgctggag 780
caggtgcagt ccatggtggt gggcgaagtg ctcaaggaca tcgagacggc ctgcaagctg 840
ctcaacatca ccgcagatcc catggactgg agccccagca atgtgcagaa gtggtcctg 900
tggacagagc accaataaccg gctgcccccc atgggcaagg ccttccagga gctggcgggc 960
aaggagctgt gcgccatgtc ggaggagcag ttccgccagc gctcgcccct gggtggggat 1020
gtgctgcacg cccacctgga catctggaag tcagcggcct ggatgaaaga gcggacttca 1080
cctggggcga ttactactg tgcctcgacc agtgaggaga gctggaccga cagcgaggtg 1140
gactcatcat gctccgggca gcccatccac ctgtggcagt tcctcaagga gttgctactc 1200
aagccccaca gctatggccg cttcattagg tggctcaaca aggagaaggg catcttcaaa 1260
attgaggact cagcccaggt ggcccgctg tggggcatcc gcaagaaccg tcccgccatg 1320
aactacgaca agctgagccg ctccatccgc cagtattaca agaagggcag catccggaag 1380
ccagacatct cccagcgcct cgtctaccag ttctgtcacc ccatctgagt gcctggccca 1440
gggcctgaaa cccgccctca ggggcctctc tcctgcctgc cctgcctcag ccaggccctg 1500
agatggggga aaacgggcag tctgctctgc tgctctgacc ttccagagcc caaggtcagg 1560
gaggggcaac caactgcccc agggggatat gggctcctctg gggccttcgg gaccctgggg 1620
caggggtgct tcctcctcag gccagctgc tcccctggag gacagaggga gacagggctg 1680
ctccccaaaca cctgcctctg accccagcat ttccagagca gagcctacag aagggcagtg 1740
actcgacaaa ggccacaggc agtccaggcc tctctctgct ccatccccct gcctcccatt 1800
ctgcaccaca cctggcatgg tgcagggaga catctgcacc cctgagttgg gcagccagga 1860
gtgcccccgga gaatggataa taaagatact agagaactga aaaaaaaaaa aaaaaaaaaa 1920
aaacaaaaaa aaaaaaaaaa aa 1942

```

<210> 84  
 <211> 335  
 <212> PRT  
 <213> Homo sapiens

<400> 84

Met Gly Ser Ala Ser Pro Gly Leu Ser Ser Val Ser Pro Ser His Leu  
 1 5 10 15

Leu Leu Pro Pro Asp Thr Val Ser Arg Thr Gly Leu Glu Lys Ala Ala  
 20 25 30

Ala Gly Ala Val Gly Leu Glu Arg Arg Asp Trp Ser Pro Ser Pro Pro  
 35 40 45

Ala Thr Pro Glu Gln Gly Leu Ser Ala Phe Tyr Leu Ser Tyr Phe Asp  
 50 55 60

Met Leu Tyr Pro Glu Asp Ser Ser Trp Ala Ala Lys Ala Pro Gly Ala  
 65 70 75 80

Ser Ser Arg Glu Glu Pro Pro Glu Glu Pro Glu Gln Cys Pro Val Ile  
 85 90 95

Asp Ser Gln Ala Pro Ala Gly Ser Leu Asp Leu Val Pro Gly Gly Leu  
 100 105 110

Thr Leu Glu Glu His Ser Leu Glu Gln Val Gln Ser Met Val Val Gly  
 115 120 125

Glu Val Leu Lys Asp Ile Glu Thr Ala Cys Lys Leu Leu Asn Ile Thr  
 130 135 140

Ala Asp Pro Met Asp Trp Ser Pro Ser Asn Val Gln Lys Trp Leu Leu  
 145 150 155 160

Trp Thr Glu His Gln Tyr Arg Leu Pro Pro Met Gly Lys Ala Phe Gln  
 165 170 175

Glu Leu Ala Gly Lys Glu Leu Cys Ala Met Ser Glu Glu Gln Phe Arg  
 180 185 190

Gln Arg Ser Pro Leu Gly Gly Asp Val Leu His Ala His Leu Asp Ile  
 195 200 205

Trp Lys Ser Ala Ala Trp Met Lys Glu Arg Thr Ser Pro Gly Ala Ile  
 210 215 220

His Tyr Cys Ala Ser Thr Ser Glu Glu Ser Trp Thr Asp Ser Glu Val  
 225 230 235 240

Asp Ser Ser Cys Ser Gly Gln Pro Ile His Leu Trp Gln Phe Leu Lys  
 245 250 255

Glu Leu Leu Leu Lys Pro His Ser Tyr Gly Arg Phe Ile Arg Trp Leu  
 260 265 270

Asn Lys Glu Lys Gly Ile Phe Lys Ile Glu Asp Ser Ala Gln Val Ala  
 275 280 285

Arg Leu Trp Gly Ile Arg Lys Asn Arg Pro Ala Met Asn Tyr Asp Lys  
 290 295 300

Leu Ser Arg Ser Ile Arg Gln Tyr Tyr Lys Lys Gly Ile Ile Arg Lys  
 305 310 315 320

Pro Asp Ile Ser Gln Arg Leu Val Tyr Gln Phe Val His Pro Ile  
 325 330 335

<210> 85  
 <211> 1224  
 <212> DNA  
 <213> Homo sapiens

<400> 85  
 ggagctctcc ccggtctgac agccactcca gaggccatgc ttcgtttcct gccagatttg 60  
 gctttcagct tctgttaat tctggctttg ggccaggcag tccaatttca agaatatgtc 120  
 tttctccaat ttctgggctt agataaggcg ccttcacccc agaagttcca acctgtgcct 180  
 tatatcttga agaaaatttt ccaggatcgc gaggcagcag cgaccactgg ggtctcccga 240  
 gacttatgct acgtaaagga gctgggcgtc cgcgggaatg tacttcgctt tctcccagac 300  
 caaggtttct ttctttaccc aaagaaaatt tccaagctt cctcctgcct gcagaagctc 360  
 ctctacttta acctgtctgc catcaaagaa agggaacagt tgacattggc ccagctgggc 420  
 ctggacttgg ggcccaattc ttactataac ctgggaccag agctggaact ggctctgttc 480  
 ctggttcagg agcctcatgt gtggggccag accacccta agccaggtaa aatgtttgtg 540  
 ttgcggtcag tcccatggcc acaagggtgt gttcacttca acctgctgga ttagactaag 600  
 gattggaatg acaacccccg gaaaaatttc gggttatttc tggagatact ggtcaaagaa 660  
 gatagagact caggggtgaa ttttcagcct gaagacacct gtgccagact aagatgctcc 720  
 cttcatgctt ccctgctggt ggtgactctc aacctgatc agtgccaccc ttctcggaaa 780

```

aggagagcag ccatccctgt ccccaagctt tcttgtaaga acctctgcca ccgtcaccag      840
ctattcatta acttccggga cctgggttgg cacaagtgga tcattgcccc caaggggttc      900
atggcaaat actgccatgg agagtgtccc ttctactga ccatctctct caacagctcc      960
aattatgctt tcatgcaagc cctgatgcat gccgttgacc cagagatccc ccaggctgtg     1020
tgtatcccca ccaagctgtc tcccatttcc atgctctacc aggacaataa tgacaatgtc     1080
attctacgac attatgaaga catggtagtc gatgaatgtg ggtgtgggta ggatgtcaga     1140
aatgggaata gaaggagtgt tcttagggta aatcttttaa taaaactacc tatctggttt     1200
atgaccactt agatcgaaat gtca                                           1224

```

```

<210> 86
<211> 364
<212> PRT
<213> Homo sapiens

```

```

<400> 86

```

```

Met Leu Arg Phe Leu Pro Asp Leu Ala Phe Ser Phe Leu Leu Ile Leu
1           5           10           15

```

```

Ala Leu Gly Gln Ala Val Gln Phe Gln Glu Tyr Val Phe Leu Gln Phe
20           25           30

```

```

Leu Gly Leu Asp Lys Ala Pro Ser Pro Gln Lys Phe Gln Pro Val Pro
35           40           45

```

```

Tyr Ile Leu Lys Lys Ile Phe Gln Asp Arg Glu Ala Ala Ala Thr Thr
50           55           60

```

```

Gly Val Ser Arg Asp Leu Cys Tyr Val Lys Glu Leu Gly Val Arg Gly
65           70           75           80

```

```

Asn Val Leu Arg Phe Leu Pro Asp Gln Gly Phe Phe Leu Tyr Pro Lys
85           90           95

```

```

Lys Ile Ser Gln Ala Ser Ser Cys Leu Gln Lys Leu Leu Tyr Phe Asn
100          105          110

```

```

Leu Ser Ala Ile Lys Glu Arg Glu Gln Leu Thr Leu Ala Gln Leu Gly
115          120          125

```

Leu Asp Leu Gly Pro Asn Ser Tyr Tyr Asn Leu Gly Pro Glu Leu Glu  
 130 135 140  
 Leu Ala Leu Phe Leu Val Gln Glu Pro His Val Trp Gly Gln Thr Thr  
 145 150 155 160  
 Pro Lys Pro Gly Lys Met Phe Val Leu Arg Ser Val Pro Trp Pro Gln  
 165 170 175  
 Gly Ala Val His Phe Asn Leu Leu Asp Val Ala Lys Asp Trp Asn Asp  
 180 185 190  
 Asn Pro Arg Lys Asn Phe Gly Leu Phe Leu Glu Ile Leu Val Lys Glu  
 195 200 205  
 Asp Arg Asp Ser Gly Val Asn Phe Gln Pro Glu Asp Thr Cys Ala Arg  
 210 215 220  
 Leu Arg Cys Ser Leu His Ala Ser Leu Leu Val Val Thr Leu Asn Pro  
 225 230 235 240  
 Asp Gln Cys His Pro Ser Arg Lys Arg Arg Ala Ala Ile Pro Val Pro  
 245 250 255  
 Lys Leu Ser Cys Lys Asn Leu Cys His Arg His Gln Leu Phe Ile Asn  
 260 265 270  
 Phe Arg Asp Leu Gly Trp His Lys Trp Ile Ile Ala Pro Lys Gly Phe  
 275 280 285  
 Met Ala Asn Tyr Cys His Gly Glu Cys Pro Phe Ser Leu Thr Ile Ser  
 290 295 300  
 Leu Asn Ser Ser Asn Tyr Ala Phe Met Gln Ala Leu Met His Ala Val  
 305 310 315 320  
 Asp Pro Glu Ile Pro Gln Ala Val Cys Ile Pro Thr Lys Leu Ser Pro  
 325 330 335  
 Ile Ser Met Leu Tyr Gln Asp Asn Asn Asp Asn Val Ile Leu Arg His  
 340 345 350

Tyr Glu Asp Met Val Val Asp Glu Cys Gly Cys Gly  
 355 360

<210> 87  
 <211> 993  
 <212> DNA  
 <213> Homo sapiens

<400> 87  
 ggcacgaggg gcagaggctc cggagccatg caggccgaag gccggggcac aggggggttcg 60  
 acgggcatg ctgatggccc aggaggccct ggcattcctg atggcccagg gggcaatgct 120  
 ggcggcccag gagaggcggg tgccacgggc gccagaggtc cccggggcgc aggggcagca 180  
 agggcctcgg ggccgagagg aggcgccccg cgggggtccgc atggcgggtgc cgcttctgcg 240  
 caggatggaa ggtgcccctg cggggccagg aggcgggaca gccgcctgct tgagttgcac 300  
 atcacgatgc ctttctcgtc gcccatggaa gccgagctgg tccgcaggat cctgtcccgg 360  
 gatgccgcac cgctcccccg accaggggcg gttctgaagg acttcaccgt gtccggcaac 420  
 ctactgttta tgtcagttcg ggaccaggac agggaaggcg ctgggcggat gagggtggtg 480  
 gggtgggggc tgggatccgc ctccccggag gggcagaaag ctagagatct cagaacaccc 540  
 aaacacaagg tctcagaaca gagacctggt acaccaggcc cgccgccacc cgaggagacc 600  
 caggagatg ggtgcagagg tgtcgccttt aatgtgatgt tctctgcccc tcacatttag 660  
 ccgactgact gctgcagacc accgccaact gcagctctcc atcagctcct gtctccagca 720  
 gctttccctg ttgatgtgga tcacgcagtg ctttctgccc gtgttttttg ctcaggctcc 780  
 ctcagggcag aggcgctaag ccagacctgg cggcccttcc taggtcatgc ctctccct 840  
 agggaatggt ccagcacga gtggccagtt cattgtggg gcctgattgt ttgtcgctgg 900  
 aggaggacgg cttacatgtt tgtttctgta gaaaataaag ctgagctacg aaaaaaaaaa 960  
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 993

<210> 88  
 <211> 210  
 <212> PRT  
 <213> Homo sapiens

<400> 88

Met Gln Ala Glu Gly Arg Gly Thr Gly Gly Ser Thr Gly Asp Ala Asp  
 1 5 10 15



Gly Pro Gly Gly Pro Gly Ile Pro Asp Gly Pro Gly Gly Asn Ala Gly  
                   20                  25                  30  
 Gly Pro Gly Glu Ala Gly Ala Thr Gly Gly Arg Gly Pro Arg Gly Ala  
                   35                  40                  45  
 Gly Ala Ala Arg Ala Ser Gly Pro Arg Gly Gly Ala Pro Arg Gly Pro  
                   50                  55                  60  
 His Gly Gly Ala Ala Ser Ala Gln Asp Gly Arg Cys Pro Cys Gly Ala  
   65                  70                  75                  80  
 Arg Arg Pro Asp Ser Arg Leu Leu Glu Leu His Ile Thr Met Pro Phe  
                   85                  90                  95  
 Ser Ser Pro Met Glu Ala Glu Leu Val Arg Arg Ile Leu Ser Arg Asp  
                   100                  105                  110  
 Ala Ala Pro Leu Pro Arg Pro Gly Ala Val Leu Lys Asp Phe Thr Val  
                   115                  120                  125  
 Ser Gly Asn Leu Leu Phe Met Ser Val Arg Asp Gln Asp Arg Glu Gly  
                   130                  135                  140  
 Ala Gly Arg Met Arg Val Val Gly Trp Gly Leu Gly Ser Ala Ser Pro  
   145                  150                  155                  160  
 Glu Gly Gln Lys Ala Arg Asp Leu Arg Thr Pro Lys His Lys Val Ser  
                   165                  170                  175  
 Glu Gln Arg Pro Gly Thr Pro Gly Pro Pro Pro Pro Glu Gly Ala Gln  
                   180                  185                  190  
 Gly Asp Gly Cys Arg Gly Val Ala Phe Asn Val Met Phe Ser Ala Pro  
                   195                  200                  205  
 His Ile  
       210

<210> 89  
 <211> 236  
 <212> DNA  
 <213> Homo sapiens

<400> 89  
 ccaggaagta ctggccactt cttcaaccct ctttagcaga ggtgaggggc agtgcccatc 60  
 cagagtctgg caccaacggg ccttgccaag tagctgctga gtgaatgggc acatgacgcc 120  
 accctcagaa aggaaagcaa gatccggcgc accccctcag ggcgagcaaa accccatggg 180  
 atccgcagag gaagcaggcc tagaatgccc cccaccacc cccagacaag cctgac 236

<210> 90  
 <211> 47  
 <212> PRT  
 <213> Homo sapiens

<400> 90

Leu Leu Ser Glu Trp Ala His Asp Ala Thr Leu Arg Lys Glu Ser Lys  
 1 5 10 15

Ile Arg Arg Thr Pro Ser Gly Arg Ala Lys Pro His Gly Ile Arg Arg  
 20 25 30

Gly Ser Arg Pro Arg Met Pro Pro Thr His Pro Gln Thr Ser Leu  
 35 40 45

<210> 91  
 <211> 1584  
 <212> DNA  
 <213> Homo sapiens

<400> 91  
 ccactccc accgtccgt ccggcccacc cggccaccag ccatggctct ggccgtctcg 60  
 ctgcccctgg cctgtcgcgc gcggtgctg ctgctgctgc tgtctctgct gccagtggcc 120  
 agggcctcag aggctgagca ccgtctatct gagcggctgt ttgaagatta caatgagatc 180  
 atccggcctg tagccaacgt gtctgaccca gtcacatcc atttcgaggt gtccatgtct 240  
 cagctgggtga aggtggatga agtaaaccag atcatggaga ccaacctgtg gctcaagcaa 300  
 atctggaatg actacaagct gaagtgaac ccctctggct atggtggggc agagttcatg 360  
 cgtgtccctg cacagaagat ctggaagcca gacattgtgc tgtataacaa tgctgttggg 420  
 gatttccagg tgacgaccaa gaccaaagcc ttactcaagt aactgggga ggtgacttgg 480  
 atacctccgg ccatctttaa gagctcctgt aaaatcgacg tgacctactt cccgtttgat 540  
 taccaaaact gtacatgaa gttcgggtcc tggcctacg ataaggcgaa aatcgatctg 600  
 gtcctgatcg gctcttccat gaacctcaag gactattggg agagcggcga gtgggccatc 660

```

atcaaagccc caggctacaa acacgacatc aagtacaact gctgcgagga gatctacccc      720
gacatcacat actcgctgta cagtcggcgc ctgcccttgt tctacaccat caacctcatc      780
atccccctgcc tgctcatctc cttcctcact gtgctcgtct tctacctgcc ctccgactgc      840
ggtgagaagg tgaccctgtg catttctgtc ctctctctcc tgacgggtgtt tctcctgggtg      900
atcactgaga ccatcccttc cacctcgctg gtcacccccc tgattggaga gtacctcctg      960
ttcaccatga tttttgtaac cttgtccatc gtcacaccg tcttcgtgct caacgtgcac     1020
tacagaaccc cgacgacaca cacaatgccc tcatgggtga agactgtatt cttgaacctg     1080
ctccccaggg tcatgttcat gaccaggcca acaagcaacg agggcaacgc tcagaagccg     1140
agggccctct acggtgccga gctctcaaat ctgaattgct tcagccgcgc agagtccaaa     1200
ggctgcaagg agggctaccc ctgccaggac gggatgtgtg gttactgcc aaccgcagg     1260
ataaaaatct ccaatttcag tgctaacctc acgagaagct ctagttctga atctgttgat     1320
gctgtgggtg ccctctctgc tttgtcacca gaaatcaaag aagccatcca aagtgtcaag     1380
tatattgctg aaaatatgaa agcacaaaat gaagccaaag agattcaaga tgattggaag     1440
tatgttgcca tgggtgattga tcgtattttt ctgtgggttt tcaccctggg gtgcattcta     1500
gggacagcag gattgtttct gcaaccctg atggccaggg aagatgcata agcactaagc     1560
tgtgtgcctg cctgggaaga cttc                                           1584

```

```

<210> 92
<211> 502
<212> PRT
<213> Homo sapiens

```

```
<400> 92
```

```

Met Ala Leu Ala Val Ser Leu Pro Leu Ala Cys Arg Ala Arg Leu Leu
1           5           10           15

```

```

Leu Leu Leu Leu Ser Leu Leu Pro Val Ala Arg Ala Ser Glu Ala Glu
20           25           30

```

```

His Arg Leu Phe Glu Arg Leu Phe Glu Asp Tyr Asn Glu Ile Ile Arg
35           40           45

```

```

Pro Val Ala Asn Val Ser Asp Pro Val Ile Ile His Phe Glu Val Ser
50           55           60

```

Met Ser Gln Leu Val Lys Val Asp Glu Val Asn Gln Ile Met Glu Thr  
 65 70 75 80  
 Asn Leu Trp Leu Lys Gln Ile Trp Asn Asp Tyr Lys Leu Lys Trp Asn  
 85 90 95  
 Pro Ser Gly Tyr Gly Gly Ala Glu Phe Met Arg Val Pro Ala Gln Lys  
 100 105 110  
 Ile Trp Lys Pro Asp Ile Val Leu Tyr Asn Asn Ala Val Gly Asp Phe  
 115 120 125  
 Gln Val Thr Thr Lys Thr Lys Ala Leu Leu Lys Tyr Thr Gly Glu Val  
 130 135 140  
 Thr Trp Ile Pro Pro Ala Ile Phe Lys Ser Ser Cys Lys Ile Asp Val  
 145 150 155 160  
 Thr Tyr Phe Pro Phe Asp Tyr Gln Asn Cys Thr Met Lys Phe Gly Ser  
 165 170 175  
 Trp Ser Tyr Asp Lys Ala Lys Ile Asp Leu Val Leu Ile Gly Ser Ser  
 180 185 190  
 Met Asn Leu Lys Asp Tyr Trp Glu Ser Gly Glu Trp Ala Ile Ile Lys  
 195 200 205  
 Ala Pro Gly Tyr Lys His Asp Ile Lys Tyr Asn Cys Cys Glu Glu Ile  
 210 215 220  
 Tyr Pro Asp Ile Thr Tyr Ser Leu Tyr Ser Arg Arg Leu Pro Leu Phe  
 225 230 235 240  
 Tyr Thr Ile Asn Leu Ile Ile Pro Cys Leu Leu Ile Ser Phe Leu Thr  
 245 250 255  
 Val Leu Val Phe Tyr Leu Pro Ser Asp Cys Gly Glu Lys Val Thr Leu  
 260 265 270  
 Cys Ile Ser Val Leu Leu Ser Leu Thr Val Phe Leu Leu Val Ile Thr  
 275 280 285

Glu Thr Ile Pro Ser Thr Ser Leu Val Ile Pro Leu Ile Gly Glu Tyr  
 290 295 300

Leu Leu Phe Thr Met Ile Phe Val Thr Leu Ser Ile Val Ile Thr Val  
 305 310 315 320

Phe Val Leu Asn Val His Tyr Arg Thr Pro Thr Thr His Thr Met Pro  
 325 330 335

Ser Trp Val Lys Thr Val Phe Leu Asn Leu Leu Pro Arg Val Met Phe  
 340 345 350

Met Thr Arg Pro Thr Ser Asn Glu Gly Asn Ala Gln Lys Pro Arg Pro  
 355 360 365

Leu Tyr Gly Ala Glu Leu Ser Asn Leu Asn Cys Phe Ser Arg Ala Glu  
 370 375 380

Ser Lys Gly Cys Lys Glu Gly Tyr Pro Cys Gln Asp Gly Met Cys Gly  
 385 390 395 400

Tyr Cys His His Arg Arg Ile Lys Ile Ser Asn Phe Ser Ala Asn Leu  
 405 410 415

Thr Arg Ser Ser Ser Ser Glu Ser Val Asp Ala Val Val Ser Leu Ser  
 420 425 430

Ala Leu Ser Pro Glu Ile Lys Glu Ala Ile Gln Ser Val Lys Tyr Ile  
 435 440 445

Ala Glu Asn Met Lys Ala Gln Asn Glu Ala Lys Glu Ile Gln Asp Asp  
 450 455 460

Trp Lys Tyr Val Ala Met Val Ile Asp Arg Ile Phe Leu Trp Val Phe  
 465 470 475 480

Thr Leu Val Cys Ile Leu Gly Thr Ala Gly Leu Phe Leu Gln Pro Leu  
 485 490 495

Met Ala Arg Glu Asp Ala  
 500

<210> 93  
 <211> 515  
 <212> DNA  
 <213> Homo sapiens

<400> 93  
 tttttttaaa actttttaag aagttgttta ttgccaataa ttaaagagct caaaggggaag 60  
 tcatttaacc atgagattgc caaatagaac tctacaacag ctgattcaac cttttttaaaa 120  
 ttttccctgg ggagagactt cactactatc tctgctgatg gactccatag ttctcatact 180  
 ttacctgaaa gttcttccta acatctgac tcaacctttc ttgccggggc attggcctgt 240  
 tttcccagcc aagccttggt tttgtttttg aggaacgaac agcttttttg ggtacagacc 300  
 aggagtccat gggctcttgag gacctctgtg tatttatcag ttttcttctc cacattcttt 360  
 ttggcctgtc tccatagact tgtgagcccc atgccttggt taagggggaa aaatggcatt 420  
 tccctacaaa ttaaattgaa gaatccatag agaactggac cccattaaaa atatttgga 480  
 ttcacatggc cacttgatca tattccgctg gctca 515

<210> 94  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

<400> 94

Met Ala Phe Pro Tyr Lys Leu Asn Val Arg Ile His Arg Glu Leu Asp  
 1 5 10 15

Pro Ile Lys Asn Ile Trp Asn Ser His Gly His Leu Ile Ile Phe Arg  
 20 25 30

Trp Leu

<210> 95  
 <211> 490  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (439)..(439)  
 <223> n = unknown

<400> 95

```

ataatatttta ttttaaataag tggagatagg gtctcactct gttgtccacg ctggtcttgc      60
ctcaagtagt cctcctgcct cagcctccca gagtgctggg attacagatg tcaaccactt      120
caccagcct gtgctgtctt tattgaaaat agcaagcgat gattttccaa accagaaggc      180
caagcaggaa agcccagcgc gtcccttgcc ctcaaactca gctcttgggg aggtgtccag      240
tgacgtcctc tctgctgtac aggatgatcc caccocgatc gttaggaaga tgtgccccag      300
gaactcggga tttccttagt gtggtgatta ggggtgaaat ggatcctttg atagggagtt      360
tcttgatgga acgaagggcg agagtgtctc tgagaagtgc tgcagaccaa ggagggccag      420
cctgtcctgg agcacctgng gctgttcttg gagtaaggct gaagggccag aactgatgg      480
cttatggtgg                                     490

```

```

<210> 96
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<222> (94)..(94)
<223> X = unknown

```

<400> 96

```

Met Ile Phe Gln Thr Arg Arg Pro Ser Arg Lys Ala Gln Arg Val Pro
1                               5                               10                               15

Cys Pro Gln Thr Gln Leu Leu Gly Arg Cys Pro Val Thr Ser Ser Leu
                               20                               25                               30

Leu Tyr Arg Met Ile Pro Pro Arg Ser Leu Gly Arg Cys Ala Pro Gly
                               35                               40                               45

Thr Arg Asp Phe Leu Ser Val Val Ile Arg Gly Glu Met Asp Pro Leu
50                               55                               60

Ile Gly Ser Phe Leu Met Glu Arg Arg Ala Arg Val Ser Leu Arg Ser
65                               70                               75                               80

Ala Ala Asp Gln Gly Gly Pro Ala Cys Pro Gly Ala Pro Xaa Ala Val
                               85                               90                               95

```

Leu Gly Val Arg Leu Lys Gly Gln Thr Leu Met Ala Tyr Gly  
 100 105 110

<210> 97  
 <211> 3174  
 <212> DNA  
 <213> Homo sapiens

<400> 97  
 ggctcaccga caacttcata gccgccgtgc gccgccgaga cttcgccaac atgaccagcc 60  
 tgggtgcacct cactctctcc cggaacacca tcggccaggt ggcagctggc gccttcgccg 120  
 acctgcgtgc cctccggggc ctgcacctgg acagcaaccg cctggcggag gtgcgcggcg 180  
 accagctccg cggcctgggc aacctccgcc acctgatcct tggaacaac cagatccgcc 240  
 ggggtggagtc ggcggccttt gacgccttcc tgtccaccgt ggaggacctg gatctgtcct 300  
 acaacaacct ggaggccctg ccgtgggagg cgggtgggcca gatggtgaac ctaaacaccc 360  
 tcacgctgga ccacaacctc atcgaccaca tcgcggaggg gaccttcgtg cagcttcaca 420  
 agctgggtccg tctggacatg acctccaacc gcctgcataa actcccgcc gacgggctct 480  
 tcctgaggtc gcagggcacc gggcccaagc cggccacccc gctgaccgtc agcttcggcg 540  
 gcaaccccct gcaactgcaac tgcgagctgc tctggctgcg gcggctgacc cgcgaggacg 600  
 acttagagac ctgcgccacg cccgaacacc tcaccgaccg ctacttctgg tccatccccg 660  
 aggaggagtt cctgtgtgag cccccgtga tcacacggca ggcggggggc cgggccctgg 720  
 tgggtggaagg ccaggcggtg agcctgcgct gccgagcggg gggtgacccc gagccggtgg 780  
 tgcactgggt ggcacctgat gggcggtgc tggggaactc cagccggacc cgggtccggg 840  
 gggacgggac gctggatgtg accatcacca ccttgaggga cagtggcacc ttcacttgta 900  
 tcgcctccaa tgctgctggg gaagcgacgg cggccgtgga ggtgtgctg gtacctctgc 960  
 ctctgatggc acccccgccg gctgccccgc cgcctctcac cgagccggc tcctctgaca 1020  
 tcgccacgcc gggcagacca ggtgccaacg attctgcggc tgagcgtcgg ctcggtggcag 1080  
 ccgagctcac ctggaactcc gtgctcatcc gctggccagc ccagaggcct gtgcccggaa 1140  
 tacgcatgta ccaggttcag tacaacagtt ccgttgatga ctccctcgtc tacaggatga 1200  
 tcccgtccac cagtcagacc ttctggtga atgacctggc ggcgggccgt gcctacgact 1260  
 tgtgcgtgct ggcggtctac gacgacgggg ccacagcgt gccggcaacg cgagtgggtg 1320  
 gctgtgtaca gttcaccacc gctggggatc cggcgccctg ccgcccgtg agggcccatt 1380



tcttgggcgg	caccatgata	atcgccatcg	ggggcgatcat	cgtcgcctcg	gtcctcgtct	1440
tcacgtttct	gctcatgata	cgctataagg	tgtatggcga	cggggacagc	cgccgcgtca	1500
agggctccag	gtcgctcccg	cgggtcagcc	acgtgtgctc	gcagaccaac	ggcgcaggca	1560
caggcgcggc	acaggccccg	gccctgccgg	cccaggacca	ctacgaggcg	ctgcgcgagg	1620
tggagtccca	ggctgcccc	gccgtgccg	tcgaggccaa	ggccatggag	gccgagacgg	1680
catccgcgga	gccggagggtg	gtccttggac	gttctctggg	cggtcggcc	acctcgctgt	1740
gcctgctgcc	atccgaggaa	acttcgggg	aggagtctcg	ggccgcgggtg	ggccctcgaa	1800
ggagccgata	cgggcgccctg	gagccaccaa	cctcggcgcc	ccctactcta	gctctagttc	1860
ctgggggagc	cgcgggcccg	ccgaggccgc	agcagcgcta	ttcgttcgac	ggggactacg	1920
gggcactatt	ccagagccac	agttaccgcg	gccgcgccc	gcggaacaag	cgccaccggt	1980
ccacgcgcga	cctggacggg	gctggagggg	gcgcggcccg	ggaggatgga	gacctggggc	2040
tgggctccgc	cagggcgtgc	ctggctttca	ccagcaccga	gtggatgctg	gagagtaccg	2100
tgtgagcggc	gggcggggcg	cgggacgcct	gggtgccgca	gaccaaagc	ccagccgcac	2160
ggacgctggg	gcgggactgg	gagaaagcgc	agcgccaaga	cattggacca	gagtggagac	2220
gcgcccttgt	ccccgggagg	gggcggggca	gcctcgggct	gcggctcgag	gccacgcccc	2280
cgtgcccagg	gcgggggttcg	gggaccggct	gccggcctcc	cttcccctat	ggactcctcg	2340
acccccctcc	taccctctcc	ctcgcgcgct	cgcggaacctc	gctggagccg	gtgccttaca	2400
cagcgaagcg	cggggagggg	cagggcccc	tgacactgca	gactgagac	acgagcccc	2460
tccccagcc	cgtcacccg	ggccggggcg	aggggcccat	ttcttgtatc	tggttggaact	2520
agatcctatt	ctgtcccgcg	gcggcctcca	aagcctccca	ccccaccca	cgcacattcc	2580
tggtcgggtc	gggtctggct	tggggctccc	ctttctctgt	ttccctcggt	tgtctctatc	2640
ccgccctctt	gtcgtctctc	tgtagtgcct	gtctttccct	atttgccctc	cctttctctc	2700
tgtcctgtcg	tctcttgtcc	ctcgccctc	cctggttttg	tctagtctcc	ctgtctctcc	2760
tgattttctt	tctttactca	ttctcccg	caggtccac	tggaaggacc	agactctccc	2820
aaataaatcc	ccacacgaac	aaaatccaaa	accaaattccc	cctccctacc	ggagccggga	2880
ccctccgcg	cagcagaatt	aaactttttt	ctgtgtctga	ggccctgctg	acctgtgtgt	2940
gtgtctgtat	gtgtgtccgc	gtgtagtgtg	tgtgtgtgtg	tgtgtgtgtg	tgtgtgtgtg	3000
tgtgtgtgtg	ttgggggagg	gtgacctaga	ttgcagcata	aggactctaa	gtgagactga	3060

aggaagatgg gaagatgact aactgggggcc ggaggagact ggcagacagg cttttatcct 3120

ctgagagact tagaggtggg gaataatcac aaaaataaaa tgatcataat agct 3174

<210> 98  
 <211> 700  
 <212> PRT  
 <213> Homo sapiens

<400> 98

Leu Thr Asp Asn Phe Ile Ala Ala Val Arg Arg Arg Asp Phe Ala Asn  
 1 5 10 15

Met Thr Ser Leu Val His Leu Thr Leu Ser Arg Asn Thr Ile Gly Gln  
 20 25 30

Val Ala Ala Gly Ala Phe Ala Asp Leu Arg Ala Leu Arg Ala Leu His  
 35 40 45

Leu Asp Ser Asn Arg Leu Ala Glu Val Arg Gly Asp Gln Leu Arg Gly  
 50 55 60

Leu Gly Asn Leu Arg His Leu Ile Leu Gly Asn Asn Gln Ile Arg Arg  
 65 70 75 80

Val Glu Ser Ala Ala Phe Asp Ala Phe Leu Ser Thr Val Glu Asp Leu  
 85 90 95

Asp Leu Ser Tyr Asn Asn Leu Glu Ala Leu Pro Trp Glu Ala Val Gly  
 100 105 110

Gln Met Val Asn Leu Asn Thr Leu Thr Leu Asp His Asn Leu Ile Asp  
 115 120 125

His Ile Ala Glu Gly Thr Phe Val Gln Leu His Lys Leu Val Arg Leu  
 130 135 140

Asp Met Thr Ser Asn Arg Leu His Lys Leu Pro Pro Asp Gly Leu Phe  
 145 150 155 160

Leu Arg Ser Gln Gly Thr Gly Pro Lys Pro Pro Thr Pro Leu Thr Val  
 165 170 175

Ser Phe Gly Gly Asn Pro Leu His Cys Asn Cys Glu Leu Leu Trp Leu  
 180 185 190

Arg Arg Leu Thr Arg Glu Asp Asp Leu Glu Thr Cys Ala Thr Pro Glu  
 195 200 205

His Leu Thr Asp Arg Tyr Phe Trp Ser Ile Pro Glu Glu Glu Phe Leu  
 210 215 220

Cys Glu Pro Pro Leu Ile Thr Arg Gln Ala Gly Gly Arg Ala Leu Val  
 225 230 235 240

Val Glu Gly Gln Ala Val Ser Leu Arg Cys Arg Ala Val Gly Asp Pro  
 245 250 255

Glu Pro Val Val His Trp Val Ala Pro Asp Gly Arg Leu Leu Gly Asn  
 260 265 270

Ser Ser Arg Thr Arg Val Arg Gly Asp Gly Thr Leu Asp Val Thr Ile  
 275 280 285

Thr Thr Leu Arg Asp Ser Gly Thr Phe Thr Cys Ile Ala Ser Asn Ala  
 290 295 300

Ala Gly Glu Ala Thr Ala Pro Val Glu Val Cys Val Val Pro Leu Pro  
 305 310 315 320

Leu Met Ala Pro Pro Pro Ala Ala Pro Pro Pro Leu Thr Glu Pro Gly  
 325 330 335

Ser Ser Asp Ile Ala Thr Pro Gly Arg Pro Gly Ala Asn Asp Ser Ala  
 340 345 350

Ala Glu Arg Arg Leu Val Ala Ala Glu Leu Thr Ser Asn Ser Val Leu  
 355 360 365

Ile Arg Trp Pro Ala Gln Arg Pro Val Pro Gly Ile Arg Met Tyr Gln  
 370 375 380

Val Gln Tyr Asn Ser Ser Val Asp Asp Ser Leu Val Tyr Arg Met Ile  
 385 390 395 400

Pro Ser Thr Ser Gln Thr Phe Leu Val Asn Asp Leu Ala Ala Gly Arg  
 405 410 415  
 Ala Tyr Asp Leu Cys Val Leu Ala Val Tyr Asp Asp Gly Ala Thr Ala  
 420 425 430  
 Leu Pro Ala Thr Arg Val Val Gly Cys Val Gln Phe Thr Thr Ala Gly  
 435 440 445  
 Asp Pro Ala Pro Cys Arg Pro Leu Arg Ala His Phe Leu Gly Gly Thr  
 450 455 460  
 Met Ile Ile Ala Ile Gly Gly Val Ile Val Ala Ser Val Leu Val Phe  
 465 470 475 480  
 Ile Val Leu Leu Met Ile Arg Tyr Lys Val Tyr Gly Asp Gly Asp Ser  
 485 490 495  
 Arg Arg Val Lys Gly Ser Arg Ser Leu Pro Arg Val Ser His Val Cys  
 500 505 510  
 Ser Gln Thr Asn Gly Ala Gly Thr Gly Ala Ala Gln Ala Pro Ala Leu  
 515 520 525  
 Pro Ala Gln Asp His Tyr Glu Ala Leu Arg Glu Val Glu Ser Gln Ala  
 530 535 540  
 Ala Pro Ala Val Ala Val Glu Ala Lys Ala Met Glu Ala Glu Thr Ala  
 545 550 555 560  
 Ser Ala Glu Pro Glu Val Val Leu Gly Arg Ser Leu Gly Gly Ser Ala  
 565 570 575  
 Thr Ser Leu Cys Leu Leu Pro Ser Glu Glu Thr Ser Gly Glu Glu Ser  
 580 585 590  
 Arg Ala Ala Val Gly Pro Arg Arg Ser Arg Ser Gly Ala Leu Glu Pro  
 595 600 605  
 Pro Thr Ser Ala Pro Pro Thr Leu Ala Leu Val Pro Gly Gly Ala Ala  
 610 615 620

Ala Arg Pro Arg Pro Gln Gln Arg Tyr Ser Phe Asp Gly Asp Tyr Gly  
625 630 635 640

Ala Leu Phe Gln Ser His Ser Tyr Pro Arg Arg Ala Arg Arg Thr Lys  
645 650 655

Arg His Arg Ser Thr Pro His Leu Asp Gly Ala Gly Gly Gly Ala Ala  
660 665 670

Gly Glu Asp Gly Asp Leu Gly Leu Gly Ser Ala Arg Ala Cys Leu Ala  
675 680 685

Phe Thr Ser Thr Glu Trp Met Leu Glu Ser Thr Val  
690 695 700

<210> 99  
<211> 697  
<212> DNA  
<213> Homo sapiens

<400> 99  
gaggccgtga acaaggccct ggagctgtcc ctgcagctca accgcgtctc gctggagcga 60  
gactccctgt ctcgaggagct gctgcgcgcc atccgccaga aggtggcgct cacgcaggag 120  
ctggaggcct ggcaggacga catgcaggtg gtgatcgggc agcagctgcg ctcacagcgc 180  
cagaaggagc tgagcgcctc cgcgtcgtcg tcgaccccg cccgtgccgc gccccgcttc 240  
tcgccgcgcc tgggccccgg gcccgccggt ggctttctca gtaacctctt ccgaaggacc 300  
tgacggctgg gccagaggg ctgcccttgc ccacttaggg gctcactttc ctcttcaggg 360  
caatggagcg acagggccca gattgtcttc caaaagaagc tgatgccctc cccgccccag 420  
gatgctgggc aagggtcat cgggagcagg ggctcatccg gagcaggggc cagctttgtg 480  
gggcaggagc tccaggtggg tggcaggggc aggtgaacag agctattttc cgaattaata 540  
taggtctatc ttttctaggg cagggatggg gctgggtatt tatgtatcaa gatcggacag 600  
agtaatatat aaatcactcc accgatttgg cccccattca tagaaagaaa gagcatggta 660  
aaaaagcctg aaactttatt gtaaaaaaaaa aaaaaaa 697

<210> 100  
<211> 100  
<212> PRT  
<213> Homo sapiens

&lt;400&gt; 100

Glu Ala Val Asn Lys Ala Leu Glu Leu Ser Leu Gln Leu Asn Arg Val  
 1 5 10 15

Ser Leu Glu Arg Asp Ser Leu Ser Arg Glu Leu Leu Arg Ala Ile Arg  
 20 25 30

Gln Lys Val Ala Leu Thr Gln Glu Leu Glu Ala Trp Gln Asp Asp Met  
 35 40 45

Gln Val Val Ile Gly Gln Gln Leu Arg Ser Gln Arg Gln Lys Glu Leu  
 50 55 60

Ser Ala Ser Ala Ser Ser Ser Thr Pro Arg Arg Ala Ala Pro Arg Phe  
 65 70 75 80

Ser Pro Arg Leu Gly Pro Gly Pro Ala Gly Gly Phe Leu Ser Asn Leu  
 85 90 95

Phe Arg Arg Thr  
 100

&lt;210&gt; 101

&lt;211&gt; 302

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 101

tttttttttaa agctttttctc atttttcttta ttgtggttga atccaattta aattaaaata 60  
 tgaaatgctt aacaatcata aaatcagtat ttgctgtggt aaacaaaaga gatctacact 120  
 agtattttaca actctttaat ttgttttaaaa aggaggcaat ataaccattt taacacattt 180  
 aaaccttttg cctctagaag atatatcaat taacacacaa tattcaagga aatcagtgtc 240  
 gtatagatat ttttgggtcta ttaaggtgca atttataata cagaaccaac acaatactga 300  
 ag 302

&lt;210&gt; 102

&lt;211&gt; 38

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 102

Leu Pro Leu Glu Asp Ile Ser Ile Asn Thr Gln Tyr Ser Arg Lys Ser  
 1 5 10 15

Val Leu Tyr Arg Tyr Phe Trp Ser Ile Lys Val Gln Phe Ile Ile Gln  
 20 25 30

Asn Gln His Asn Thr Glu  
 35

<210> 103  
 <211> 1628  
 <212> DNA  
 <213> Homo sapiens

<400> 103  
 acttgcgaca aggtggactt gggaggaaaag ccgtctgcc aagcctgaag cctccaagcc 60  
 ataaacaacc ccaatggcct cccacgaagt tgataatgca gagctgggggt cagcctctgc 120  
 ccatggtacc ccaggcagtg aggcgggacc agaagagctg aatacttctg tctaccagcc 180  
 catagatgga tcaccagatt atcagaaagc aaaattacaa gttcttgggg ccatccagat 240  
 cctgaatgca gcaatgattc tggctttggg tgtctttctg ggctccttgc aatacccata 300  
 ccacttccaa aagcacttct ttttcttcac cttctacaca ggctaccga tttgggggtgc 360  
 tgtgtttttc tgtagttcag gaacctgtc tgtttagca gggataaaac ccacaagaac 420  
 atggatacag aacagttttg gaatgaacat tgccagtgtc acaattgcac tagtggggac 480  
 tgcttttctc tctaataata tagcagttaa tatccagtca ttaaggagtt gtcactcttc 540  
 atcagagtca ccggacctat gcaattacat gggctccata tcaaattggca tgggtgtctct 600  
 actgctgatt ctacacctgc tggaattatg cgtaaccatc tctaccatag ccatgtggtg 660  
 caatgcaaac tgctgtaatt caagagagga aatttcctca cctcccaatt ctgtgtaatc 720  
 aagaatacct ccttaattct gagagcatga atatttgacc ttaaattctcc agtgactcag 780  
 agcttcaccc aaaaactcag gagaacataa gcctgtcgt aaagctcaat cttctatca 840  
 tggcaccaat cacaagaacc ttggacgttt gactgactct atcctttctc tctaactat 900  
 aaatcctatt tgtgtgtcgt gggatatggaa ggacagatat atttctttag gcattcttgg 960  
 atatctgtaa cttctatgat cattactcca aagttgtttc cagaaattgg ttctatctct 1020  
 tcttatccac ctactccatt gctttatgag gtttaaggaa ggaaggcggg ataatcccta 1080  
 ttcaatatat tttttctaaa atccaacttc tgaccgccca gtaggaagaa aaatgagaca 1140

```

ttttttccat tacagagaaa tgcttcttga ctttaacatc agcattataa aaagtgtcaa 1200
ataaaaaaatt accatcatta tcattaaaat aaattttcac tgtatttgag atgggagggt 1260
taagggtcag ggattttatt tcagtgaact gctggaactc acacatgcc tgaatgtaa 1320
atgatgattt atgttggcga gtctgagagc aagcccaaat gtgttcttca aaggacaatg 1380
ggaaactgta aagtagagaa ctaaagaata aggccttttag aatctgacac atctgggttc 1440
aaattctgaa actgtcactt attacctgta tgaacatggg caaattatct aatctctctg 1500
atctattttt cctcatctgt aaaatagggtg taataataac aactactttg tcggttgctc 1560
tgagggttaa atgaaaataa aaagaaaatg tgaaacaaca aaaaaaaaaa aaaaaaaaaa 1620
aaaaaaaaa 1628

```

```

<210> 104
<211> 214
<212> PRT
<213> Homo sapiens

```

```

<400> 104

```

```

Met Ala Ser His Glu Val Asp Asn Ala Glu Leu Gly Ser Ala Ser Ala
1          5          10          15

```

```

His Gly Thr Pro Gly Ser Glu Ala Gly Pro Glu Glu Leu Asn Thr Ser
          20          25          30

```

```

Val Tyr Gln Pro Ile Asp Gly Ser Pro Asp Tyr Gln Lys Ala Lys Leu
          35          40          45

```

```

Gln Val Leu Gly Ala Ile Gln Ile Leu Asn Ala Ala Met Ile Leu Ala
          50          55          60

```

```

Leu Gly Val Phe Leu Gly Ser Leu Gln Tyr Pro Tyr His Phe Gln Lys
65          70          75          80

```

```

His Phe Phe Phe Phe Thr Phe Tyr Thr Gly Tyr Pro Ile Trp Gly Ala
          85          90          95

```

```

Val Phe Phe Cys Ser Ser Gly Thr Leu Ser Val Val Ala Gly Ile Lys
          100          105          110

```

```

Pro Thr Arg Thr Trp Ile Gln Asn Ser Phe Gly Met Asn Ile Ala Ser
          115          120          125

```



Ala Thr Ile Ala Leu Val Gly Thr Ala Phe Leu Ser Leu Asn Ile Ala  
 130 135 140

Val Asn Ile Gln Ser Leu Arg Ser Cys His Ser Ser Ser Glu Ser Pro  
 145 150 155 160

Asp Leu Cys Asn Tyr Met Gly Ser Ile Ser Asn Gly Met Val Ser Leu  
 165 170 175

Leu Leu Ile Leu Thr Leu Leu Glu Leu Cys Val Thr Ile Ser Thr Ile  
 180 185 190

Ala Met Trp Cys Asn Ala Asn Cys Cys Asn Ser Arg Glu Glu Ile Ser  
 195 200 205

Ser Pro Pro Asn Ser Val  
 210

<210> 105  
 <211> 2011  
 <212> DNA  
 <213> Homo sapiens

<400> 105  
 ttccagtttc tccagctgct ggcttttttg acaccactc ccccgccagg aggcagttgc 60  
 aagcgcggag gctgcgagaa ataactgcct cttgaaactt gcagggcgaa gagcaggcgg 120  
 cgagcgcgtg gccggggagg gaccaccga gctgcgacgg gctctggggc tgcggggcag 180  
 ggctggcgcc cggagcctga gctgcaggag gtgcgctcgc tttcctcaac aggtggcggc 240  
 ggggcgcgcg ccgggagacc cccctaatac cgggaaaagc acgtgtccgc attttagaga 300  
 aggcaaggcc ggtgtgttta tctgcaagcc attatacttg cccacgaatc ttgagaaca 360  
 ttataatgac ctttgtgcct cttcttgcaa ggtgttttct cagctgttat ctcaagacat 420  
 ggatataaaa aactcaccat cttagcctta ttctccttcc tcctacaact gcagtcaatc 480  
 catcttacct ctggagcacg gctccatata cataccttcc tcctatgtag acagccacca 540  
 tgaatatcca gccatgacat tctatagccc tgctgtgatg aattacagca tttccagcaa 600  
 tgtcactaac ttggaagggt ggctgggtcg gcagaccaca agcccaaagt tgttgtggcc 660  
 aacacctggg cacctttctc ctttagtggt ccatcgccag ttatcacatc tgtatgcgga 720  
 acctcaaaag agtccctggt gtgaagcaag atcgctagaa cacaccttac ctgtaaacag 780

```

agagacactg aaaaggaagg ttagtgggaa ccgttgccgc agccctgtta ctggtccagg      840
ttcaaagagg gatgctcact tctgcgctgt ctgcagcgat tacgcatcgg gatataccta      900
tggagtctgg tcgtgtgaag gatgtaaggc cttttttaa agaagcattc aaggacataa      960
tgattatatt tgtccagcta caaatcagtg tacaatcgat aaaaaccggc gcaagagctg     1020
ccaggcctgc cgacttcgga agtggttacga agtgggaatg gtgaagtgtg gctcccggag     1080
agagagatgt gggtagccgc ttgtgcggag acagagaagt gccgacgagc agctgcactg     1140
tgccggcaag gccaaagaaa gtggcggcca cgcgccccga gtgcgggagc tgctgctgga     1200
cgccctgagc cccgagcagc tagtgctcac cctcctggag gctgagccgc cccatgtgct     1260
gatcagccgc cccagtgcgc ccttcaccga ggccctccatg atgatgtccc tgaccaagtt     1320
ggccgacaag gagttgtac acatgatcag ctgggccaag aagattcccg gctttgtgga     1380
gctcagcctg ttcgaccaag tgcggctctt ggagagctgt tggatggagg tgtaaatgat     1440
ggggctgatg tggcgctcaa ttgaccaccc cggcaagctc atctttgctc cagatcttgt     1500
tctggacagg gatgagggga aatgcgtaga aggaattctg gaaatctttg acatgctcct     1560
ggcaactact tcaaggtttc gagagttaaa actccaacac aaagaatatc tctgtgtcaa     1620
ggccatgata ctgctcaatt ccagtatgta ccctctggtc acagcgaccc aggatgctga     1680
cagcagccgg aagctggctc acttgctgaa cgccgtgacc gatgctttgg tttgggtgat     1740
tgccaagagc ggcattctct cccagcagca atccatgcgc ctggctaacc tcctgatgct     1800
cctgtcccac gtcaggcatg cgagtaacaa gggcatggaa catctgctca acatgaagtg     1860
caaaaatgtg gtcccagtgt atgacctgct gctggagatg ctgaatgcc acgtgcttcg     1920
cgggtgcaag tcctccatca cggggtccga gtgcagcccg gcagaggaca gtaaaagcaa     1980
agagggctcc cagaaccac agtctcagtg a                                     2011

```

```

<210> 106
<211> 530
<212> PRT
<213> Homo sapiens

```

```

<400> 106

```

```

Met Asp Ile Lys Asn Ser Pro Ser Ser Leu Asn Ser Pro Ser Ser Tyr
1           5           10           15

```

```

Asn Cys Ser Gln Ser Ile Leu Pro Leu Glu His Gly Ser Ile Tyr Ile
20           25           30

```

```

Pro Ser Ser Tyr Val Asp Ser His His Glu Tyr Pro Ala Met Thr Phe
    35                                40                                45

Tyr Ser Pro Ala Val Met Asn Tyr Ser Ile Pro Ser Asn Val Thr Asn
    50                                55                                60

Leu Glu Gly Gly Pro Gly Arg Gln Thr Thr Ser Pro Asn Val Leu Trp
    65                                70                                75                                80

Pro Thr Pro Gly His Leu Ser Pro Leu Val Val His Arg Gln Leu Ser
    85                                90                                95

His Leu Tyr Ala Glu Pro Gln Lys Ser Pro Trp Cys Glu Ala Arg Ser
    100                                105                                110

Leu Glu His Thr Leu Pro Val Asn Arg Glu Thr Leu Lys Arg Lys Val
    115                                120                                125

Ser Gly Asn Arg Cys Ala Ser Pro Val Thr Gly Pro Gly Ser Lys Arg
    130                                135                                140

Asp Ala His Phe Cys Ala Val Cys Ser Asp Tyr Ala Ser Gly Tyr His
    145                                150                                155                                160

Tyr Gly Val Trp Ser Cys Glu Gly Cys Lys Ala Phe Phe Lys Arg Ser
    165                                170                                175

Ile Gln Gly His Asn Asp Tyr Ile Cys Pro Ala Thr Asn Gln Cys Thr
    180                                185                                190

Ile Asp Lys Asn Arg Arg Lys Ser Cys Gln Ala Cys Arg Leu Arg Lys
    195                                200                                205

Cys Tyr Glu Val Gly Met Val Lys Cys Gly Ser Arg Arg Glu Arg Cys
    210                                215                                220

Gly Tyr Arg Leu Val Arg Arg Gln Arg Ser Ala Asp Glu Gln Leu His
    225                                230                                235                                240

Cys Ala Gly Lys Ala Lys Arg Ser Gly Gly His Ala Pro Arg Val Arg
    245                                250                                255

```

Glu Leu Leu Leu Asp Ala Leu Ser Pro Glu Gln Leu Val Leu Thr Leu  
 260 265 270

Leu Glu Ala Glu Pro Pro His Val Leu Ile Ser Arg Pro Ser Ala Pro  
 275 280 285

Phe Thr Glu Ala Ser Met Met Met Ser Leu Thr Lys Leu Ala Asp Lys  
 290 295 300

Glu Leu Val His Met Ile Ser Trp Ala Lys Lys Ile Pro Gly Phe Val  
 305 310 315 320

Glu Leu Ser Leu Phe Asp Gln Val Arg Leu Leu Glu Ser Cys Trp Met  
 325 330 335

Glu Val Leu Met Met Gly Leu Met Trp Arg Ser Ile Asp His Pro Gly  
 340 345 350

Lys Leu Ile Phe Ala Pro Asp Leu Val Leu Asp Arg Asp Glu Gly Lys  
 355 360 365

Cys Val Glu Gly Ile Leu Glu Ile Phe Asp Met Leu Leu Ala Thr Thr  
 370 375 380

Ser Arg Phe Arg Glu Leu Lys Leu Gln His Lys Glu Tyr Leu Cys Val  
 385 390 395 400

Lys Ala Met Ile Leu Leu Asn Ser Ser Met Tyr Pro Leu Val Thr Ala  
 405 410 415

Thr Gln Asp Ala Asp Ser Ser Arg Lys Leu Ala His Leu Leu Asn Ala  
 420 425 430

Val Thr Asp Ala Leu Val Trp Val Ile Ala Lys Ser Gly Ile Ser Ser  
 435 440 445

Gln Gln Gln Ser Met Arg Leu Ala Asn Leu Leu Met Leu Leu Ser His  
 450 455 460

Val Arg His Ala Ser Asn Lys Gly Met Glu His Leu Leu Asn Met Lys  
 465 470 475 480

<400>	107						
ggaaccagga	ccagcagggga	cccttcaaga	tgtgcctcaa	ctacgaggtg	cgcgtgctct		60
gctgcgagac	ccccagagge	tgcccgggtga	cctctgtgac	cccatatggg	acttctccta		120
ccaatgctct	gtatccttcc	ctgtctactt	ccatgggtatc	cgcctccgtg	gcatccacct		180
ctgtggcatc	cagctctgtg	gcatccagct	ctgtggctta	ctccacccaa	acctgcttct		240
gcaacgtggc	tgaccgggctc	taccctgcag	gatccaccat	ataccgccac	agagacctcg		300
ctggccattg	ctattatgcc	ctgtgtagcc	aggactgcca	agtggtcaga	ggggttgaca		360
gtgactgtcg	gtccaccacg	ctgcctcctg	ccccagccac	gtccccttca	atatccacct		420
ccgagcccgt	cactgagctg	ggatgcccaa	atgcggttcc	cccagaaaag	aaagggtgaga		480
cctggggccac	acccaactgc	tccgaggcca	cctgtgaggg	caacaacgtc	atctccctga		540
gcccgcgcac	gtgcccagagg	gtggagaagc	ccacttgtgc	caacggctac	ccggctgtga		600
aggtggctga	ccaagatggc	tgctgccatc	actaccagtg	ccagtgtgtg	tgcagcgget		660
ggggtgaccc	ccactacatc	accttcgacg	gcacctacta	caccttcctg	gacaactgca		720
cgtacgtgct	ggtgcagcag	attgtgcccg	tgtatggcca	cttccgcgtg	ctcgtcgaca		780
actacttctg	cggtgcggag	gacgggctct	cctgcccagag	gtccatcatc	ctggagtacc		840
accaggaccg	cgtggtgctg	acccgcaagc	cagtccacgg	ggtgatgaca	aacgagatca		900
tcttcaacaa	caaggtggtc	agccccgcct	tccggaaaaa	cggcatcgtg	gtctcgcgca		960
tcggcgtaaa	gatgtacggc	accatcccgg	aactggaagt	ccaggtcatg	ttctccggcc		1020

tcattcttctc cgtggaggtg cccttcagca agtttgccaa caacaccgag ggccagtgcg	1080
gcacttgccac caacgacagg aaggatgagt gccgcacgcc tagggggacg gtggtcgctt	1140
cctgctccga gatgtccggc ctctggaacg tgagcatccc tgaccagcca gcctgccacc	1200
ggcctcaccc gacgcccacc acggtcgggc ccaccacagt tgggtctacc acggtcgggc	1260
ccaccacagt tgggtctacc accgtcgggc ccaccacacc gcctgctccg tgccctgcat	1320
cacccatctg ccacctgatt ctgagcaagg tctttgagcc gtgccacact gtgatcccc	1380
cactgctgtt ctatgagggc tgcgtctttg accggtgcc catgacggac ctggatgtgg	1440
tgtgctccag cctggagctg tacgcggcac tctgcgcgtc ccacgacatc tgcattgatt	1500
ggagaggccg gaccggccac atgtgcccac tcacctgcc agccgacaag gtgtaccagc	1560
cctgcggccc gagcaacccc tcctactgct acgggaatga cagcgccagc ctcggggctc	1620
tgccggaggc cggcccccac accgaaggct gcttctgtcc ggagggcatg accctcttca	1680
gcaccagtgc ccaagtctgc gtgcccacgg gctgcccag gtgtctgggg cccacaggag	1740
agccggtgaa ggtggggcac accgtcggca tggactgcc ggagtgcacg tgtgaggcgg	1800
ccacgtggac gctgacctgc cgacccaagc tctgcccgt gccccctgc tgccccctgc	1860
cgggttctgt gcctgtgctt gcagcccac aggcggcca gtgctgcccc cagtacagct	1920
gcgcctgcaa caccagccgc tgccccgcgc ccgtgggctg tcctgagggc gcccgcgcca	1980
tcccgacctc ccaggagggg gcctgtgtcc cagtccaaaa ctgcagctgg acagtgtgca	2040
gcatcaacgg gaccctgtac cagccggcg ccgtgggtctc ctcgagcctg tgcgaaacct	2100
gcagggtgtga gctgccgggt ggccccccat cggacgcgtt tgtggtcagc tgtgagacct	2160
agatctgcaa cacacactgc cctgtgggct tcgagtacca ggagcagagc gggcagtgtc	2220
gtggcacctg tgtgcaggtc gcctgtgtca ccaacaccag caagagcccc gccacacctc	2280
tctaccctgg cgagacctgg tcagacgcag ggaaccactg tgtgacctac cagtgtgaga	2340
agcaccagga tgggtctgtg gtggtcacca cgaagaaggc gtgccccccg ctgagctgtt	2400
ctctggacga ggcccgcatt agcaaggacg gctgctgccg cttctgcccg ctgccccgc	2460
ccccgtacca gaaccagtgc acctgtgctg tgtaccatag gagcctgatc atccagcagc	2520
agggctgcag ctctctggag cccgtgcgcc tggcttactg ccgggggaac tgtggggaca	2580
gctcttccat gtactcgctc gagggcaaca cgggtggagc caggtgccag tgcctgccag	2640
agctgcggac ctgctgagg aatgtgacct tgactgcac cgacggctcc agccgggctc	2700

tcagctacac cgaggtggaa gagtgcggct gcatggggccg gcgctgccct gcgccgggcg 2760  
 acaccagca ctcggaggag gcggaacccg agcccagcca ggaggcagag agtgggagct 2820  
 gggagagagg cgtccagtgt ccccatgca ctgaccagca ctgccgccct cctgacctcc 2880  
 aaggagaacc tcccatatgt cctctgagct cggcttccaa ggccagtga acttgtgccc 2940  
 ctgtccaggc ggctgcagct ttgaacacac tgtccacgcc cgctttcttg tggaggggtgt 3000  
 gggctatggg tcacctgctg cctggaggag gggcccttac ccacccgcc tgcagccacc 3060  
 tctcaggacc agccccgggg ctggccgagc tcctctggcc atgcatccag cctgctgttc 3120  
 tggggacgtg agcatcacct gagggctca ggaatgacgc ttggacatgg tgatcagctg 3180  
 cctgggtggct gcaggaggaa gaacctcact cctacctcag ccctcagcct gcgctcccct 3240  
 cctcagtaca cggccaatct gttgcataaa tacacttgag cattttgca 3289

<210> 108  
 <211> 1042  
 <212> PRT  
 <213> Homo sapiens

<400> 108

Asn Gln Asp Gln Gln Gly Pro Phe Lys Met Cys Leu Asn Tyr Glu Val  
 1 5 10 15

Arg Val Leu Cys Cys Glu Thr Pro Arg Gly Cys Pro Val Thr Ser Val  
 20 25 30

Thr Pro Tyr Gly Thr Ser Pro Thr Asn Ala Leu Tyr Pro Ser Leu Ser  
 35 40 45

Thr Ser Met Val Ser Ala Ser Val Ala Ser Thr Ser Val Ala Ser Ser  
 50 55 60

Ser Val Ala Ser Ser Ser Val Ala Tyr Ser Thr Gln Thr Cys Phe Cys  
 65 70 75 80

Asn Val Ala Asp Arg Leu Tyr Pro Ala Gly Ser Thr Ile Tyr Arg His  
 85 90 95

Arg Asp Leu Ala Gly His Cys Tyr Tyr Ala Leu Cys Ser Gln Asp Cys  
 100 105 110

Gln Val Val Arg Gly Val Asp Ser Asp Cys Arg Ser Thr Thr Leu Pro  
 115 120 125  
 Pro Ala Pro Ala Thr Ser Pro Ser Ile Ser Thr Ser Glu Pro Val Thr  
 130 135 140  
 Glu Leu Gly Cys Pro Asn Ala Val Pro Pro Arg Lys Lys Gly Glu Thr  
 145 150 155 160  
 Trp Ala Thr Pro Asn Cys Ser Glu Ala Thr Cys Glu Gly Asn Asn Val  
 165 170 175  
 Ile Ser Leu Ser Pro Arg Thr Cys Pro Arg Val Glu Lys Pro Thr Cys  
 180 185 190  
 Ala Asn Gly Tyr Pro Ala Val Lys Val Ala Asp Gln Asp Gly Cys Cys  
 195 200 205  
 His His Tyr Gln Cys Gln Cys Val Cys Ser Gly Trp Gly Asp Pro His  
 210 215 220  
 Tyr Ile Thr Phe Asp Gly Thr Tyr Tyr Thr Phe Leu Asp Asn Cys Thr  
 225 230 235 240  
 Tyr Val Leu Val Gln Gln Ile Val Pro Val Tyr Gly His Phe Arg Val  
 245 250 255  
 Leu Val Asp Asn Tyr Phe Cys Gly Ala Glu Asp Gly Leu Ser Cys Pro  
 260 265 270  
 Arg Ser Ile Ile Leu Glu Tyr His Gln Asp Arg Val Val Leu Thr Arg  
 275 280 285  
 Lys Pro Val His Gly Val Met Thr Asn Glu Ile Ile Phe Asn Asn Lys  
 290 295 300  
 Val Val Ser Pro Ala Phe Arg Lys Asn Gly Ile Val Val Ser Arg Ile  
 305 310 315 320  
 Gly Val Lys Met Tyr Ala Thr Ile Pro Glu Leu Gly Val Gln Val Met  
 325 330 335



Phe Ser Gly Leu Ile Phe Ser Val Glu Val Pro Phe Ser Lys Phe Ala  
 340 345 350  
 Asn Asn Thr Glu Gly Gln Cys Gly Thr Cys Thr Asn Asp Arg Lys Asp  
 355 360 365  
 Glu Cys Arg Thr Pro Arg Gly Thr Val Val Ala Ser Cys Ser Glu Met  
 370 375 380  
 Ser Gly Leu Trp Asn Val Ser Ile Pro Asp Gln Pro Ala Cys His Arg  
 385 390 395 400  
 Pro His Pro Thr Pro Thr Thr Val Gly Pro Thr Thr Val Gly Ser Thr  
 405 410 415  
 Thr Val Gly Pro Thr Thr Val Gly Ser Thr Thr Val Gly Pro Thr Thr  
 420 425 430  
 Pro Pro Ala Pro Cys Leu Pro Ser Pro Ile Cys His Leu Ile Leu Ser  
 435 440 445  
 Lys Val Phe Glu Pro Cys His Thr Val Ile Pro Pro Leu Leu Phe Tyr  
 450 455 460  
 Glu Gly Cys Val Phe Asp Arg Cys His Met Thr Asp Leu Asp Val Val  
 465 470 475 480  
 Cys Ser Ser Leu Glu Leu Tyr Ala Ala Leu Cys Ala Ser His Asp Ile  
 485 490 495  
 Cys Ile Asp Trp Arg Gly Arg Thr Gly His Met Cys Pro Phe Thr Cys  
 500 505 510  
 Pro Ala Asp Lys Val Tyr Gln Pro Cys Gly Pro Ser Asn Pro Ser Tyr  
 515 520 525  
 Cys Tyr Gly Asn Asp Ser Ala Ser Leu Gly Ala Leu Pro Glu Ala Gly  
 530 535 540  
 Pro Ile Thr Glu Gly Cys Phe Cys Pro Glu Gly Met Thr Leu Phe Ser  
 545 550 555 560

Thr Ser Ala Gln Val Cys Val Pro Thr Gly Cys Pro Arg Cys Leu Gly  
 565 570 575

Pro His Gly Glu Pro Val Lys Val Gly His Thr Val Gly Met Asp Cys  
 580 585 590

Gln Glu Cys Thr Cys Glu Ala Ala Thr Trp Thr Leu Thr Cys Arg Pro  
 595 600 605

Lys Leu Cys Pro Leu Pro Pro Ala Cys Pro Leu Pro Gly Phe Val Pro  
 610 615 620

Val Pro Ala Ala Pro Gln Ala Gly Gln Cys Cys Pro Gln Tyr Ser Cys  
 625 630 635 640

Ala Cys Asn Thr Ser Arg Cys Pro Ala Pro Val Gly Cys Pro Glu Gly  
 645 650 655

Ala Arg Ala Ile Pro Thr Tyr Gln Glu Gly Ala Cys Cys Pro Val Gln  
 660 665 670

Asn Cys Ser Trp Thr Val Cys Ser Ile Asn Gly Thr Leu Tyr Gln Pro  
 675 680 685

Gly Ala Val Val Ser Ser Ser Leu Cys Glu Thr Cys Arg Cys Glu Leu  
 690 695 700

Pro Gly Gly Pro Pro Ser Asp Ala Phe Val Val Ser Cys Glu Thr Gln  
 705 710 715 720

Ile Cys Asn Thr His Cys Pro Val Gly Phe Glu Tyr Gln Glu Gln Ser  
 725 730 735

Gly Gln Cys Cys Gly Thr Cys Val Gln Val Ala Cys Val Thr Asn Thr  
 740 745 750

Ser Lys Ser Pro Ala His Leu Phe Tyr Pro Gly Glu Thr Trp Ser Asp  
 755 760 765

Ala Gly Asn His Cys Val Thr His Gln Cys Glu Lys His Gln Asp Gly  
 770 775 780

Leu Val Val Val Thr Thr Lys Lys Ala Cys Pro Pro Leu Ser Cys Ser  
 785 790 795 800

Leu Asp Glu Ala Arg Met Ser Lys Asp Gly Cys Cys Arg Phe Cys Pro  
 805 810 815

Leu Pro Pro Pro Pro Tyr Gln Asn Gln Ser Thr Cys Ala Val Tyr His  
 820 825 830

Arg Ser Leu Ile Ile Gln Gln Gln Gly Cys Ser Ser Ser Glu Pro Val  
 835 840 845

Arg Leu Ala Tyr Cys Arg Gly Asn Cys Gly Asp Ser Ser Ser Met Tyr  
 850 855 860

Ser Leu Glu Gly Asn Thr Val Glu His Arg Cys Gln Cys Cys Gln Glu  
 865 870 875 880

Leu Arg Thr Ser Leu Arg Asn Val Thr Leu His Cys Thr Asp Gly Ser  
 885 890 895

Ser Arg Ala Phe Ser Tyr Thr Glu Val Glu Glu Cys Gly Cys Met Gly  
 900 905 910

Arg Arg Cys Pro Ala Pro Gly Asp Thr Gln His Ser Glu Glu Ala Glu  
 915 920 925

Pro Glu Pro Ser Gln Glu Ala Glu Ser Gly Ser Trp Glu Arg Gly Val  
 930 935 940

Gln Cys Pro Pro Cys Thr Asp Gln His Cys Arg Pro Pro Asp Leu Gln  
 945 950 955 960

Gly Glu Pro Pro Ile Cys Pro Leu Ser Ser Ala Ser Lys Ala Ser Gly  
 965 970 975

Thr Cys Ala Pro Val Gln Ala Ala Ala Ala Leu Asn Thr Leu Ser Thr  
 980 985 990

Pro Ala Phe Leu Trp Arg Val Trp Ala Met Gly His Leu Leu Pro Gly  
 995 1000 1005

Gly Gly Ala Leu Thr His Pro Ala Cys Ser His Leu Ser Gly Pro  
 1010 1015 1020

Ala Pro Gly Leu Ala Glu Leu Leu Trp Pro Cys Ile Gln Pro Ala  
 1025 1030 1035

Val Leu Gly Thr  
 1040

<210> 109  
 <211> 446  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (420)..(421)  
 <223> n = unknown

<400> 109  
 tttgtgagaa accacaagct ccctgggagg agtgggtcttt actcccattc aacggaagag 60  
 gaagcagagc aagcgcattcc cagcccgtgc gcagcgtggc ccgagtctgt ccagtcctgg 120  
 ctgctgggca ccgcgccggc cctgggatgc cacagcagt accaggacac acagctcctg 180  
 ctcttgcaagt ggcaggagga gctccaacat gaattaaaag taaataacca agcagaacat 240  
 cagggagaga gaagggccag gatttaaact aggtgggggc tgagagtga ttcgggggtgc 300  
 agagcagggg gggctcttgg ggcaacgctg ctgctgtctcg gagtgaatga caggagggag 360  
 cttcccaggc ggaggggagg ctggtgcagg ttcttcagcc aggaaggggg catgcaccan 420  
 nagactggga gtgagaagga gcggaa 446

<210> 110  
 <211> 143  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> MISC\_FEATURE  
 <222> (135)..(136)  
 <223> X = unknown

<400> 110

Phe Val Arg Asn His Lys Leu Pro Gly Arg Ser Gly Leu Tyr Ser His  
 1 5 10 15

Ser Thr Glu Glu Glu Ala Glu Gln Ala His Pro Ser Pro Cys Ala Ala  
20 25 30

Trp Pro Glu Ser Val Gln Ser Trp Leu Leu Gly Thr Ala Pro Ala Leu  
35 40 45

Gly Cys His Ser Ser Asp Gln Asp Thr Gln Leu Leu Leu Leu Gln Trp  
50 55 60

Gln Glu Glu Leu Gln His Glu Leu Lys Val Asn Asn Gln Ala Glu His  
65 70 75 80

Gln Gly Glu Arg Arg Ala Arg Ile Leu Arg Val Asn Ser Gly Cys Arg  
85 90 95

Ala Gly Arg Ala Leu Gly Ala Thr Leu Leu Arg Leu Gly Val Asn Asp  
100 105 110

Arg Arg Glu Leu Pro Arg Arg Arg Gly Gly Trp Cys Arg Phe Phe Ser  
115 120 125

Gln Glu Gly Gly Met His Xaa Xaa Thr Gly Ser Glu Lys Glu Arg  
130 135 140

<210> 111  
<211> 4423  
<212> DNA  
<213> Homo sapiens

<400> 111  
agcggagact cacctctgac gccgctcttc gcgctccgct ggtgaatgga gtcgcgttct 60  
ctgttttgct gttgctgctg cctttgtgac gggatcgctt tctcccatcg aaccttctag 120  
ttgcttattg cagctttgtc tcctcagcac tctgctgtca ctcaaggaag tatcatcaag 180  
aacaaggagg gcatggatgc taagtacta actgcctggc cccggacact ggtgaccttc 240  
aaggatgtat ttgtggactt caccagggag gactggaagc tgctggacac tgctcagcag 300  
atcgtgtaca gaaatgtgat gctggagaac tataagaacc tggtttcctt gggttatcag 360  
cttactaagc cagatgtgat cctccggttg gagaaggag aagagccctg gctgggtggag 420  
agagaaattc accaagagac ccatcctgat tcagagactg catttgaaat caaatcatca 480  
gtttccagca ggagcatttt taaagataag caatcctgtg acattaaaat ggaaggaatg 540

gcaaggaatg atctctggtg tttgtcatta gaagaagtct ggaaatgtag agaccagtta	600
gacaagtatc aggaaaaccc agagagacat ttgaggcaag tggcattcac ccaaaagaaa	660
gtacttactc aggagagagt ctctgaaagt ggtaaataatg ggggaaactg tcttcttctc	720
gctcagctag tactgagaga gtattttccat aaacgtgact cacatactaa aagtttaaaa	780
catgatttag ttcttaatgg tcatcaggac agttgtgcaa gtaacagtaa tgaatgtggt	840
caaactttct gtcaaaacat tcaccttatt cagtttgcaa gaactcacac aggtgataaa	900
tcctacaaat gccctgataa tgacaactct cttactcatg gttcatctct tggatatatca	960
aagggcatac atagagagaa accctatgaa tgtaaggaat gtggaaaatt cttcagctgg	1020
cgctctaate ttactaggca tcagcttatt catactggag aaaaaccgta tgagtgtaaa	1080
gaatgtggaa agtctttcag ccggagttct cacctcattg gacatcaaaa gaccatact	1140
ggtgaggaac cctatgaatg taaagaatgt ggaaaatcct tcagctggtt ctctcacctt	1200
gttactcatc agagaactca tacaggagac aaactgtaca catgtaatca gtgtgggaaa	1260
tcttttggtc atagctctag gcttattaga caccagagga cacatactgg agagaaaccc	1320
tatgaatgtc ctgaatgtgg gaaatcttct agacagagca cacatctcat tctgcatcag	1380
agaacccatg tgagagttag gccctatgaa tgcaatgaat gtggaaagtc ttacagccag	1440
agatctcacc ttgttggtga tcatagaatt cacactggac taaaaccttt tgagtgtgag	1500
gattgtggaa aatgttttag tcgaagctct cacctttatt cacatcaaag aaccacact	1560
ggagagaaac catatgagtg tcatgattgt ggaaaatcct tcagccagag ttctgccctt	1620
attgtgcatc agaggataca cactggagag aaaccatatg aatgctgtca gtgtgggaaa	1680
gccttcatcc ggaagaatga cctcattaag caccagagaa ttcatgttgg agaagagacc	1740
tataaatgta atcaatgtgg cattatcttc agccagaact ctccatttat agttcatcaa	1800
atagctcaca ctggagagca gttcttaaca tgcaatcaat gtgggacagc gcttggtta	1860
acctctaacc ttattggata ccagacaaat catattagag aaaatgctta ctaataaata	1920
tggaattttt tcacaaagag caatgacttt attttgcatg ggagaactcc tggagataag	1980
ctgtacaaat tgaatctatg tggaaatgct ttcagtcttg ttactatcct attgcacatt	2040
agagaattgg tcctggaagg gaaagaaacc acagatttta tttcagtaca caaatccatc	2100
agattttctt cttttcatga attcctacag aagtaattgg cctgagagca ttcttgacca	2160
agtcttaaat gctagaatct gagaaggaat tattaatatg gtgagttggt gagcgagAAC	2220

cacttcattt	gaaaagaaat	gagtatgcta	ctatagggag	agttggtgct	gagaattaag	2280
aaatgataca	gttaatgcaa	caaaagatgg	aaaataatat	ttcagtcaat	atgtcattgt	2340
tttcttgact	atgtctctct	tctgggacat	ttagtagtgt	ttggtatggt	ttatgtgtct	2400
ggtagaaacc	atatttttgt	taacagcaag	aaaaatgctt	ataatgtagt	acaattaaaa	2460
acaacacatc	tccactacca	gtgctaaccc	atttttaagt	acatttgcat	gtgggcaaga	2520
attgaaagta	tacagataat	tgaacagaat	tgatttggtt	gataaggaga	ttttgactga	2580
gttttatagt	ctgtttaatg	ttgctgtaat	aattatttta	agaaactttt	aaatattgta	2640
agaggatatc	tagtttctct	attctaccat	caaagaagct	tttgagtacc	acctgttaat	2700
gagctttcct	attctaaatt	gttttgggtc	acagagttcc	actttttcca	ctcttattag	2760
cactgcaaaa	gctcctgaga	atttaaaaac	acagtaattc	tctggatggt	aggacctagg	2820
ggaacattgg	gcatttgaac	atatcaggga	gggtcccat	tttagtgga	acaagtattt	2880
aaacaatatt	tagagcaagt	gtcctcatgt	gataaacaga	gcacagtcca	aagataccct	2940
ctttctcaag	gtagtctttt	atctttataa	agaaagatta	gtgtttaaga	gcgtagactt	3000
gagctagact	accagggttg	aaacccact	agctgggtga	tcttgaacat	gctgcttagc	3060
ttctctgtgc	caaacttact	gatatcctca	tctgtaaatt	agcgataata	atagtactta	3120
cctggtagga	ttatggtgag	tattaaatga	gtaaatggaa	acagcttaga	atagtgcctg	3180
acatatatta	tgttctctgt	agttactggc	tgtgattatt	aataatattg	ccgcacccta	3240
atatctgtta	tttaattgaa	atctgcttgt	gtgcttataa	gaatttactg	agttctcact	3300
tcccttacag	tcatacatgg	ttttccctt	ttgcctaaat	cagaactcaa	cagcctggga	3360
aatcactga	caaatagtgg	atataggttt	catttctgag	gatcaataaa	cagcttgtaa	3420
tgttgtatac	acattttatt	tgtttgtaca	aaggttttcc	attctatgga	gaggatccca	3480
gtcttcagat	tctctggtaa	gttaataacc	cacaaaagat	tcaggaagag	gatctatttt	3540
aattttctct	ttcattctat	aatcagttct	gttgatatata	gggactgacc	atgattctcc	3600
attttctggc	ataaatatta	gctgctcaat	gattgattgt	tgaatgatag	atgaagtatt	3660
gctgaagcca	accagagatc	ttgatctctc	tctgaggaaa	aaacctagaa	atgatgggta	3720
gaatcaggag	acttgagaac	tacgaggaac	atggcagcct	ctagctcata	cttgctggtg	3780
tacaattgag	atcaagtga	ttggccccgg	tctcacattt	tcagtgaagt	cagactcaga	3840
actaggctct	gggtttcatg	tttctgtctg	ctcttctcac	tgtgtacaca	ccatgcccac	3900

atacaacata cctatcagaa atggttttca ttaagggagt agaatagtca cttaactggg 3960  
 gctcttaaca ttgctaataa cctgtggctc aatttcctca actgtataat gaggttacta 4020  
 ctagtatcta cctcaaagcg ttgtcatgtg gattgagatg atatgtatga atcacataaa 4080  
 agagtgcctg gcacatagta ggtgccatta ataatattac tattgttaac accttaaggg 4140  
 tctaacttgt aatgaagaca gaaatatgta tgaggatgat cactgaaata tttatgacag 4200  
 tgcataattht gcaaaataaa aaatgtacac tagcataata tttgtggcat atccgtgtaa 4260  
 tggaagatta tgcaggcatt aaaatatgta cacaaaaagt ttggtaaagg aaaaatgctg 4320  
 tcatgtgtta caaaagcatg ataaataatt gttaatatgg aataagctca aatatgtcaa 4380  
 aataaatgta aaaaatgagt gttgctcaaa aaaaaaaaaa aaa 4423

<210> 112  
 <211> 573  
 <212> PRT  
 <213> Homo sapiens

<400> 112

Met Asp Ala Lys Ser Leu Thr Ala Trp Ser Arg Thr Leu Val Thr Phe  
1 5 10 15

Lys Asp Val Phe Val Asp Phe Thr Arg Glu Glu Trp Lys Leu Leu Asp  
20 25 30

Thr Ala Gln Gln Ile Val Tyr Arg Asn Val Met Leu Glu Asn Tyr Lys  
35 40 45

Asn Leu Val Ser Leu Gly Tyr Gln Leu Thr Lys Pro Asp Val Ile Leu  
50 55 60

Arg Leu Glu Lys Gly Glu Glu Pro Trp Leu Val Glu Arg Glu Ile His  
65 70 75 80

Gln Glu Thr His Pro Asp Ser Glu Thr Ala Phe Glu Ile Lys Ser Ser  
85 90 95

Val Ser Ser Arg Ser Ile Phe Lys Asp Lys Gln Ser Cys Asp Ile Lys  
100 105 110

Met Glu Gly Met Ala Arg Asn Asp Leu Trp Tyr Leu Ser Leu Glu Glu  
115 120 125



Val Trp Lys Cys Arg Asp Gln Leu Asp Lys Tyr Gln Glu Asn Pro Glu  
 130 135 140

Arg His Leu Arg Gln Val Ala Phe Thr Gln Lys Lys Val Leu Thr Gln  
 145 150 155 160

Glu Arg Val Ser Glu Ser Gly Lys Tyr Gly Gly Asn Cys Leu Leu Pro  
 165 170 175

Ala Gln Leu Val Leu Arg Glu Tyr Phe His Lys Arg Asp Ser His Thr  
 180 185 190

Lys Ser Leu Lys His Asp Leu Val Leu Asn Gly His Gln Asp Ser Cys  
 195 200 205

Ala Ser Asn Ser Asn Glu Cys Gly Gln Thr Phe Cys Gln Asn Ile His  
 210 215 220

Leu Ile Gln Phe Ala Arg Thr His Thr Gly Asp Lys Ser Tyr Lys Cys  
 225 230 235 240

Pro Asp Asn Asp Asn Ser Leu Thr His Gly Ser Ser Leu Gly Ile Ser  
 245 250 255

Lys Gly Ile His Arg Glu Lys Pro Tyr Glu Cys Lys Glu Cys Gly Lys  
 260 265 270

Phe Phe Ser Trp Arg Ser Asn Leu Thr Arg His Gln Leu Ile His Thr  
 275 280 285

Gly Glu Lys Pro Tyr Glu Cys Lys Glu Cys Gly Lys Ser Phe Ser Arg  
 290 295 300

Ser Ser His Leu Ile Gly His Gln Lys Thr His Thr Gly Glu Glu Pro  
 305 310 315 320

Tyr Glu Cys Lys Glu Cys Gly Lys Ser Phe Ser Trp Phe Ser His Leu  
 325 330 335

Val Thr His Gln Arg Thr His Thr Gly Asp Lys Leu Tyr Thr Cys Asn  
 340 345 350

Gln Cys Gly Lys Ser Phe Val His Ser Ser Arg Leu Ile Arg His Gln  
 355 360 365  
 Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys Pro Glu Cys Gly Lys  
 370 375 380  
 Ser Phe Arg Gln Ser Thr His Leu Ile Leu His Gln Arg Thr His Val  
 385 390 395 400  
 Arg Val Arg Pro Tyr Glu Cys Asn Glu Cys Gly Lys Ser Tyr Ser Gln  
 405 410 415  
 Arg Ser His Leu Val Val His His Arg Ile His Thr Gly Leu Lys Pro  
 420 425 430  
 Phe Glu Cys Lys Asp Cys Gly Lys Cys Phe Ser Arg Ser Ser His Leu  
 435 440 445  
 Tyr Ser His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Glu Cys His  
 450 455 460  
 Asp Cys Gly Lys Ser Phe Ser Gln Ser Ser Ala Leu Ile Val His Gln  
 465 470 475 480  
 Arg Ile His Thr Gly Glu Lys Pro Tyr Glu Cys Cys Gln Cys Gly Lys  
 485 490 495  
 Ala Phe Ile Arg Lys Asn Asp Leu Ile Lys His Gln Arg Ile His Val  
 500 505 510  
 Gly Glu Glu Thr Tyr Lys Cys Asn Gln Cys Gly Ile Ile Phe Ser Gln  
 515 520 525  
 Asn Ser Pro Phe Ile Val His Gln Ile Ala His Thr Gly Glu Gln Phe  
 530 535 540  
 Leu Thr Cys Asn Gln Cys Gly Thr Ala Leu Val Asn Thr Ser Asn Leu  
 545 550 555 560  
 Ile Gly Tyr Gln Thr Asn His Ile Arg Glu Asn Ala Tyr  
 565 570

<210> 113  
 <211> 1130  
 <212> DNA  
 <213> Homo sapiens

<400> 113  
 ggcccttaga gtcttggttg ccaaacagat ttgcagatca aggagaaccc aggagtttca 60  
 aagaagcgct agtaaggtct ctgagatcct tgcactagct acatcctcag ggtaggagga 120  
 agatggcttc cagaagcatg cggctgctcc tattgctgag ctgcctggcc aaaacaggag 180  
 tcctgggtga tatcatcatg agaccagct gtgctcctgg atggttttac cacaagtcca 240  
 attgctatgg ttacttcagg aagctgagga actgggtctga tgccgagctc gagtgtcagt 300  
 cttacggaaa cggagcccac ctggcatcta tcctgagttt aaaggaagcc agcaccatag 360  
 cagagtacat aagtggctat cagagaagcc agccgatatg gattggcctg cacgaccac 420  
 agaagaggca gcagtggcag tggattgatg gggccatgta tctgtacaga tcctgggtctg 480  
 gcaagtccat gggtgggaaac aagcactgtg ctgagatgag ctccaataac aactttttta 540  
 cttggagcag caacgaatgc aacaagcgcc aacacttcct gtgcaagtac cgaccataga 600  
 gcaagaatca agattctgct aactcctgca cagccccgtc ctcttccttt ctgctagcct 660  
 ggctaaatct gctcattatt tcagagggga aacctagcaa actaagagtg ataagggccc 720  
 tactacactg gcttttttag gcttagagac agaaacttta gcattggccc agtagtggct 780  
 tctagctcta aatgtttgcc ccgcatccc tttccacagt atccttcttc cctcctcccc 840  
 tgtctctggc tgtctcgagc agtctagaag agtgcattctc cagcctatga aacagctggg 900  
 tctttggcca taagaagtaa agatttgaag acagaaggaa gaaactcagg agtaagcttc 960  
 tagaccctt cagcttctac acccttctgc cctctctcca ttgcctgcac cccacccag 1020  
 ccactcaact cctgcttggt tttccttttg ccataggaag gtttaccagt agaatccttg 1080  
 ctaggttgat gtgggccata cattccttta ataaaccatt gtgtacataa 1130

<210> 114  
 <211> 158  
 <212> PRT  
 <213> Homo sapiens

<400> 114

Met Ala Ser Arg Ser Met Arg Leu Leu Leu Leu Ser Cys Leu Ala  
 1 5 10 15

Lys Thr Gly Val Leu Gly Asp Ile Ile Met Arg Pro Ser Cys Ala Pro  
                   20                                  25                                  30

Gly Trp Phe Tyr His Lys Ser Asn Cys Tyr Gly Tyr Phe Arg Lys Leu  
           35                                  40                                  45

Arg Asn Trp Ser Asp Ala Glu Leu Glu Cys Gln Ser Tyr Gly Asn Gly  
       50                                  55                                  60

Ala His Leu Ala Ser Ile Leu Ser Leu Lys Glu Ala Ser Thr Ile Ala  
   65                                  70                                  75                                  80

Glu Tyr Ile Ser Gly Tyr Gln Arg Ser Gln Pro Ile Trp Ile Gly Leu  
                   85                                  90                                  95

His Asp Pro Gln Lys Arg Gln Gln Trp Gln Trp Ile Asp Gly Ala Met  
                   100                                  105                                  110

Tyr Leu Tyr Arg Ser Trp Ser Gly Lys Ser Met Gly Gly Asn Lys His  
           115                                  120                                  125

Cys Ala Glu Met Ser Ser Asn Asn Asn Phe Leu Thr Trp Ser Ser Asn  
       130                                  135                                  140

Glu Cys Asn Lys Arg Gln His Phe Leu Cys Lys Tyr Arg Pro  
   145                                  150                                  155

<210> 115  
 <211> 447  
 <212> DNA  
 <213> Homo sapiens

<400> 115  
 cccgtcttga cacaccgcag ctgacaagga gaagtaaaat agggcaccca aactactctg 60  
 cgctttaccc tctcaaacac ttgttttttaa atccttttgca tctagtcagt cattcaacat 120  
 gtatcaagca ccagcagcta ttcgtagcac agctgttaag acctggaata ataaaacctt 180  
 aagactattdt ggcaacttac tcctgaaagg taatatacgg ataatttcat ctgtaacacg 240  
 cagatgagga aattgacctc acagatttaa tgtaaattca gagtttacac caatttaacc 300  
 gcaacaaata aggagctgtc aatatatatt taataaggaa cacacaaaaa aaaagctgaa 360  
 taaatccact tcctaccttc tgctccagtt gcctctgcca gctggtgaaa gcttaaggag 420

ctgagccctc ttagcctcga ggatgag

447

<210> 116  
 <211> 59  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 116

Arg Leu Asp Thr Pro Gln Leu Thr Arg Arg Ser Lys Ile Gly His Pro  
 1 5 10 15

Asn Tyr Ser Ala Leu Tyr Pro Leu Lys His Leu Phe Leu Asn Pro Leu  
 20 25 30

His Leu Val Ser His Ser Thr Cys Ile Lys His Gln Gln Leu Phe Val  
 35 40 45

Ala Gln Leu Leu Arg Pro Gly Ile Ile Lys Pro  
 50 55

<210> 117  
 <211> 319  
 <212> DNA  
 <213> Homo sapiens

&lt;400&gt; 117

ggatgaagctc ccagccatca gccatgaggg tcttgatatct cctcttctcg ttctctttca 60  
 tattcctgat gcctcttcca ggtgtttttg gtgggtatagg cgatcctgtt acctgcctta 120  
 agagtggagc catatgtcat ccagtctttt gccctagaag gtataaaciaa attggcacct 180  
 gtgggtctccc tggaacaaaa tgctgcaaaa agccatgagg aggccaagaa gctgctgtgg 240  
 ctgatgcgga ttcagaaagg gctccctcat cagagacgtg cgacatgtaa accaaattaa 300  
 actatggtgt ccaaagata 319

<210> 118  
 <211> 64  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 118

Met Arg Val Leu Tyr Leu Leu Phe Ser Phe Leu Phe Ile Phe Leu Met  
 1 5 10 15

Pro Leu Pro Gly Val Phe Gly Gly Ile Gly Asp Pro Val Thr Cys Leu  
 20 25 30

Lys Ser Gly Ala Ile Cys His Pro Val Phe Cys Pro Arg Arg Tyr Lys  
 35 40 45

Gln Ile Gly Thr Cys Gly Leu Pro Gly Thr Lys Cys Cys Lys Lys Pro  
 50 55 60

<210> 119  
 <211> 582  
 <212> DNA  
 <213> Homo sapiens

<400> 119  
 gggggccaaa caccttctctg acaccatgag ggccagcagc ttcttgatcg tggtggtggtt 60  
 cctcatcgct gggacgctgg ttctagaggc agctgtcacg ggagttcctg ttaaagggtca 120  
 agacactgtc aaaggccgtg ttccattcaa tggacaagat cccgttaaag gacaagtttc 180  
 agttaaagggt caagataaag tcaaagcgca agagccagtc aaagggtccag tctccactaa 240  
 gcctggctcc tgccccatta tcttgatccg gtgcgccatg ttgaatcccc ctaaccgctg 300  
 cttgaaagat actgactgcc caggaatcaa gaagtgtgtt gaaggctctt gcgggatggc 360  
 ctgtttcgtt cccagtgag agggagccgg tccttgctgc acctgtgccg tccccagagc 420  
 tacaggctcc atctggtcct aagtccctgc tgcccttccc cttcccacac tgtccattct 480  
 tcctoccatt caggatgccc acggctggag ctgcctctct catccacttt ccaataaaga 540  
 gttccttctg caaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 582

<210> 120  
 <211> 117  
 <212> PRT  
 <213> Homo sapiens

<400> 120

Met Arg Ala Ser Ser Phe Leu Ile Val Val Val Phe Leu Ile Ala Gly  
 1 5 10 15

Thr Leu Val Leu Glu Ala Ala Val Thr Gly Val Pro Val Lys Gly Gln  
 20 25 30

Asp Thr Val Lys Gly Arg Val Pro Phe Asn Gly Gln Asp Pro Val Lys  
 35 40 45

Gly Gln Val Ser Val Lys Gly Gln Asp Lys Val Lys Ala Gln Glu Pro  
 50 55 60

Val Lys Gly Pro Val Ser Thr Lys Pro Gly Ser Cys Pro Ile Ile Leu  
 65 70 75 80

Ile Arg Cys Ala Met Leu Asn Pro Pro Asn Arg Cys Leu Lys Asp Thr  
 85 90 95

Asp Cys Pro Gly Ile Lys Lys Cys Cys Glu Gly Ser Cys Gly Met Ala  
 100 105 110

Cys Phe Val Pro Gln  
 115

<210> 121  
 <211> 3005  
 <212> DNA  
 <213> Homo sapiens

<400> 121  
 gcggcagsgc gcggcagcag aagctcggct cagcggctgg gggcggccgc tcgaatctgc 60  
 cagggcacct cgctccctcg cctctggcag cgggaccctg tgggcattga aatccaactc 120  
 actcatgctt atttcctgta atggacaaac ttgatgctaa tgtgagttct gaggagggtt 180  
 tcgggtcagt ggagaagggtg gtgctgctca cgtttctctc gacggttatc ctgatggcca 240  
 tcttggggaa cctgctggtg atggtggctg tgtgctggga caggcagctc agggaaataa 300  
 aaacaaatta ttctattgta tctcttgctt ttgcggatct gctggtttcg gtgctggtga 360  
 tgccctttgg tgccattgag ctgggttcaag acatctggat ttatggggag gtgttttgtc 420  
 ttgttcggac atctctggac gtctgctca caacggcatc gatttttcac ctgtgctgca 480  
 tttctctgga taggtattac gccatctgct gccagccttt ggtctatagg aacaagatga 540  
 cccctctgcg catcgatta atgctgggag gctgctgggt catccccacg tttatttctt 600  
 ttctccctat aatgcaaggc tggaataaca ttggcataat tgatttgata gaaaagagga 660  
 agttcaacca gaactctaac tctacgtact gtgtcttcat ggtcaacaag ccctacgcca 720  
 tcacctgctc tgtgggtggc ttctacatcc catttctcct catggtgctg gcctattacc 780  
 gcacttatgt cacagctaag gagcatgcc atcagatcca gatgttaca cgggcaggag 840  
 cctcctccga gagcaggcct cagtcggcag accagcatag cactcatcgc atgaggacag 900

agaccaaagc agccaagacc ctgtgcatca tcatggggttg cttctgcctc tgctggggcac	960
cattctttgt caccaatatt gtggatcctt tcatagacta cactgtccct gggcaggtgt	1020
ggactgcttt cctctggctc ggctatatca attccgggtt gaaccctttt ctctacgcct	1080
tcttgaataa gtcttttaga cgtgccttcc tcatcatcct ctgctgtgat gatgagcgct	1140
accgaagacc ttccattctg ggccagactg tcccttggtc aaccacaacc attaatggat	1200
ccacacatgt actaagggat gcagtggagt gtggtggcca gtgggagagt cagtgtcacc	1260
cgccagcaac ttctccttg gtggctgctc agccagtgta cacttaggcc cctgggacaa	1320
tgaccagaa gacagccatg cctccgaaag agggccaggt cctaagctgc tgcttgtgcg	1380
cgactgcacc cggattctc ttacctgag gctttccgtc cgccagtga ggaaccgggt	1440
gctcgctggg cttttcctct gagattccag caggtggcgc tggaggaggt caggggacat	1500
aatggcctcc ttgttcactt tttatttccc aacactccct ctcccagat tctctgcttt	1560
tgccgctgg tctctggtgt ctctgacatg ttcccgtcac tcaactgtgtc tgatctgtct	1620
cactcacgtt ctaagcacga tagcttgctg cgtcctatct cggtcactga tgtctccaaa	1680
tacgccttct ttgctgtgtg ggcttcaga tatcaacaaa atactccctc tctgttcctg	1740
tcttagccag aggcgtcgt cctgtcttgc ttacttgctt ggtcacgtcc gtcacagcca	1800
tgttcaagct atccctgcct cttcttcgcc ctgttctgtg ccagacgcta acacactttt	1860
ctccctgtgt ctgggtccaa acgtgcatcc tcttggttg ccccttgctc agtcccagac	1920
gtccacttgc tcttccttat gtccaatgtc tgtcctcctc ttcaggacat gctccattta	1980
ttttccatgg aagacacagg gtcagagatc tgtcagagga aaatgggtctc cacagcaact	2040
ctggagggaa gctgaagaca gatagcttcc tcctggtgtc ctggccgctg gcgtgtctgc	2100
cctgagatgc tcgctctcct gctgggctag aacgggacgt cttctaaaaa gccttgggca	2160
gggctagcaa catcgtaggt gtttattagg cttcaggatc tttcccatga acttgtgata	2220
tcattttgaa acccttcaat ctggctttgt tgtgccaaa ggagataact gttggaagtt	2280
cacactgggg aaactcattt tcccctgcag ctccccaag gtgcaggagg gcaggatcca	2340
gcagcactgg ggatgccgag gcaatgctgt acttgaagcc agaggacca aattgccgcc	2400
ctggctgtgc tgcaacaag ctgtgagatc ttgaatagt tcttttcac tctggacccc	2460
actttccaca tctgtgcact caagcttga ctagaggacc ttttaagttt ctttctgttt	2520
ctaagacaac agtatgctgc tatagccgtc tgctacctcg agaagccatg gcctgcctgc	2580



cttttggtt	tgtttcaaag	gaacgacct	cctcatttgg	gcctttttaga	cccctgacct	2640
ttccagcttt	gtccttcaga	ttaatctgga	tgtcttttat	tcaaagctga	gtcagtggct	2700
cttgcgatg	ccccatagca	gaagtccgg	gaaggtaa	gccaacc	gagccatgtg	2760
agattctgac	tttgatcttg	gctgtggtt	aatagcatct	caggattatt	tatcatattc	2820
tctttttttc	ttattgctta	taagggtgca	gttattgtt	ccattgttgt	ttacttttagt	2880
tctggaactg	aaaccgacag	gaagaaactt	tggaataagg	aagagaagat	tgaccaaacc	2940
atccaatgc	caaaaagraa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaagcggc	3000
cgctg						3005

&lt;210&gt; 122

&lt;211&gt; 1328

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 122

cggtgcttat	ttcctgtaat	ggacaaactt	gatgcta	tgagttctga	ggagggtttc	60
gggtcagtgg	agaaggtggt	gctgctcacg	tttctctcga	cggttatcct	gatggccatc	120
ttggggaacc	tgctggtgat	ggtggctgtg	tgctgggaca	ggcagctcag	gaaaataaaa	180
acaaattatt	tcattgtatc	tcttgctttt	gcggatctgc	tggtttcggg	gctggtgatg	240
ccctttggtg	ccattgagct	ggttcaagac	atctggattt	atggggaggt	gttttgtctt	300
gttcggacat	ctctggacgt	cctgctcaca	acggcatcga	tttttcacct	gtgctgcatt	360
tctctggata	ggtattacgc	catctgctgc	cagcctttgg	tctataggaa	caagatgacc	420
cctctgcgca	tcgcattaat	gctgggaggc	tgctgggtca	tccccacgtt	tatttctttt	480
ctccctataa	tgcaaggctg	gaataacatt	ggcataattg	atttgataga	aaagaggaag	540
ttcaaccaga	actctaactc	tacgtactgt	gtcttcatgg	tcaacaagcc	ctacgccatc	600
acctgctctg	tggtggcctt	ctacatccca	tttctcctca	tggtgctggc	ctattaccgc	660
atctatgtca	cagctaagga	gcatgcccat	cagatccaga	tgttacaacg	ggcaggagcc	720
tcctccgaga	gcaggcctca	gtcggcagac	cagcatagca	ctcatcgcat	gaggacagag	780
accaaagcag	ccaagaccct	gtgcatcatc	atgggttgct	tctgcctctg	ctgggcacca	840
ttctttgtca	ccaatattgt	ggatcctttc	atagactaca	ctgtccctgg	gcagggtgtg	900
actgctttcc	tctggctcgg	ctatatcaat	tccgggttga	acccttttct	ctacgccttc	960
ttgaataagt	cttttagacg	tgcttctctc	atcatcctct	gctgtgatga	tgagcgctac	1020

cgaagacctt ccattctggg ccagactgtc ccttggttcaa ccacaaccat taatggatcc 1080  
 acacatgtac taagggatgc agtggagtgt ggtggccagt gggagagtca gtgtcaccgc 1140  
 ccagcaactt ctcttttggg ggctgctcag cccagtgcaca cttaggcccc tgggacaatg 1200  
 acccagaaga cagccatgcc tccgaaagag ggccaggtcc taagctgctg cttgtgcgcg 1260  
 actgcaccgc gcattctctt cacctgaggc tttccgtccg ccagtgcagg aacccggtgc 1320  
 tcgctggg 1328

<210> 123  
 <211> 388  
 <212> PRT  
 <213> Homo sapiens

<400> 123

Met Asp Lys Leu Asp Ala Asn Val Ser Ser Glu Glu Gly Phe Gly Ser  
1 5 10 15

Val Glu Lys Val Val Leu Leu Thr Phe Leu Ser Thr Val Ile Leu Met  
20 25 30

Ala Ile Leu Gly Asn Leu Leu Val Met Val Ala Val Cys Trp Asp Arg  
35 40 45

Gln Leu Arg Lys Ile Lys Thr Asn Tyr Phe Ile Val Ser Leu Ala Phe  
50 55 60

Ala Asp Leu Leu Val Ser Val Leu Val Met Pro Phe Gly Ala Ile Glu  
65 70 75 80

Leu Val Gln Asp Ile Trp Ile Tyr Gly Glu Val Phe Cys Leu Val Arg  
85 90 95

Thr Ser Leu Asp Val Leu Leu Thr Thr Ala Ser Ile Phe His Leu Cys  
100 105 110

Cys Ile Ser Leu Asp Arg Tyr Tyr Ala Ile Cys Cys Gln Pro Leu Val  
115 120 125

Tyr Arg Asn Lys Met Thr Pro Leu Arg Ile Ala Leu Met Leu Gly Gly  
130 135 140

Cys Trp Val Ile Pro Thr Phe Ile Ser Phe Leu Pro Ile Met Gln Gly  
 145 150 155 160  
 Trp Asn Asn Ile Gly Ile Ile Asp Leu Ile Glu Lys Arg Lys Phe Asn  
 165 170 175  
 Gln Asn Ser Asn Ser Thr Tyr Cys Val Phe Met Val Asn Lys Pro Tyr  
 180 185 190  
 Ala Ile Thr Cys Ser Val Val Ala Phe Tyr Ile Pro Phe Leu Leu Met  
 195 200 205  
 Val Leu Ala Tyr Tyr Arg Ile Tyr Val Thr Ala Lys Glu His Ala His  
 210 215 220  
 Gln Ile Gln Met Leu Gln Arg Ala Gly Ala Ser Ser Glu Ser Arg Pro  
 225 230 235 240  
 Gln Ser Ala Asp Gln His Ser Thr His Arg Met Arg Thr Glu Thr Lys  
 245 250 255  
 Ala Ala Lys Thr Leu Cys Ile Ile Met Gly Cys Phe Cys Leu Cys Trp  
 260 265 270  
 Ala Pro Phe Phe Val Thr Asn Ile Val Asp Pro Phe Ile Asp Tyr Thr  
 275 280 285  
 Val Pro Gly Gln Val Trp Thr Ala Phe Leu Trp Leu Gly Tyr Ile Asn  
 290 295 300  
 Ser Gly Leu Asn Pro Phe Leu Tyr Ala Phe Leu Asn Lys Ser Phe Arg  
 305 310 315 320  
 Arg Ala Phe Leu Ile Ile Leu Cys Cys Asp Asp Glu Arg Tyr Arg Arg  
 325 330 335  
 Pro Ser Ile Leu Gly Gln Thr Val Pro Cys Ser Thr Thr Thr Ile Asn  
 340 345 350  
 Gly Ser Thr His Val Leu Arg Asp Ala Val Glu Cys Gly Gly Gln Trp  
 355 360 365

Glu Ser Gln Cys His Pro Pro Ala Thr Ser Pro Leu Val Ala Ala Gln  
 370 375 380

Pro Ser Asp Thr  
 385

<210> 124  
 <211> 388  
 <212> PRT  
 <213> Homo sapiens

<400> 124

Met Asp Lys Leu Asp Ala Asn Val Ser Ser Glu Glu Gly Phe Gly Ser  
 1 5 10 15

Val Glu Lys Val Val Leu Leu Thr Phe Leu Ser Thr Val Ile Leu Met  
 20 25 30

Ala Ile Leu Gly Asn Leu Leu Val Met Val Ala Val Cys Trp Asp Arg  
 35 40 45

Gln Leu Arg Lys Ile Lys Thr Asn Tyr Phe Ile Val Ser Leu Ala Phe  
 50 55 60

Ala Asp Leu Leu Val Ser Val Leu Val Met Pro Phe Gly Ala Ile Glu  
 65 70 75 80

Leu Val Gln Asp Ile Trp Ile Tyr Gly Glu Val Phe Cys Leu Val Arg  
 85 90 95

Thr Ser Leu Asp Val Leu Leu Thr Thr Ala Ser Ile Phe His Leu Cys  
 100 105 110

Cys Ile Ser Leu Asp Arg Tyr Tyr Ala Ile Cys Cys Gln Pro Leu Val  
 115 120 125

Tyr Arg Asn Lys Met Thr Pro Leu Arg Ile Ala Leu Met Leu Gly Gly  
 130 135 140

Cys Trp Val Ile Pro Thr Phe Ile Ser Phe Leu Pro Ile Met Gln Gly  
 145 150 155 160

Trp Asn Asn Ile Gly Ile Ile Asp Leu Ile Glu Lys Arg Lys Phe Asn

										165											170											175	
Gln	Asn	Ser	Asn	Ser	Thr	Tyr	Cys	Val	Phe	Met	Val	Asn	Lys	Pro	Tyr																		
										180											185											190	
Ala	Ile	Thr	Cys	Ser	Val	Val	Ala	Phe	Tyr	Ile	Pro	Phe	Leu	Leu	Met																		
										195											200											205	
Val	Leu	Ala	Tyr	Tyr	Arg	Ile	Tyr	Val	Thr	Ala	Lys	Glu	His	Ala	His																		
										210											215											220	
Gln	Ile	Gln	Met	Leu	Gln	Arg	Ala	Gly	Ala	Ser	Ser	Glu	Ser	Arg	Pro																		
										225											230											235	240
Gln	Ser	Ala	Asp	Gln	His	Ser	Thr	His	Arg	Met	Arg	Thr	Glu	Thr	Lys																		
										245											250											255	
Ala	Ala	Lys	Thr	Leu	Cys	Ile	Ile	Met	Gly	Cys	Phe	Cys	Leu	Cys	Trp																		
										260											265											270	
Ala	Pro	Phe	Phe	Val	Thr	Asn	Ile	Val	Asp	Pro	Phe	Ile	Asp	Tyr	Thr																		
										275											280											285	
Val	Pro	Gly	Gln	Val	Trp	Thr	Ala	Phe	Leu	Trp	Leu	Gly	Tyr	Ile	Asn																		
										290											295											300	
Ser	Gly	Leu	Asn	Pro	Phe	Leu	Tyr	Ala	Phe	Leu	Asn	Lys	Ser	Phe	Arg																		
										305											310											315	320
Arg	Ala	Phe	Leu	Ile	Ile	Leu	Cys	Cys	Asp	Asp	Glu	Arg	Tyr	Arg	Arg																		
										325											330											335	
Pro	Ser	Ile	Leu	Gly	Gln	Thr	Val	Pro	Cys	Ser	Thr	Thr	Thr	Ile	Asn																		
										340											345											350	
Gly	Ser	Thr	His	Val	Leu	Arg	Asp	Ala	Val	Glu	Cys	Gly	Gly	Gln	Trp																		
										355											360											365	
Glu	Ser	Gln	Cys	His	Pro	Pro	Ala	Thr	Ser	Pro	Leu	Val	Ala	Ala	Gln																		
										370											375											380	
Pro	Ser	Asp	Thr																														

385

<210> 125  
 <211> 2874  
 <212> DNA  
 <213> Homo sapiens

<400> 125  
 acagagcgct cccttgagg caccagga cctggccagc cgtgcagctg ccaggcgct 60  
 atggcgagtg cggtcaggg gtcgagggc tggccccggc tggggctcca gctccagttc 120  
 gcggcgctgc tgctcgggac gctgagtcca caggttcaca ctctcaggcc agagaacctc 180  
 ctgctggtgt ccaccttga tggaagtctc cacgcactaa gcaagcagac aggggacctg 240  
 aagtggactc tgagggatga tcccgatc gaaggaccaa tgtacgtcac agaaatggcc 300  
 tttctctctg acccagcgga tggcagcctg tacatcttgg ggacccaaaa acaactggga 360  
 ttaatgaaac tgccattcac catccctgag ctggttcattg cttctccctg ccgagctct 420  
 gatggggtct tctacacagg ccggaagcag gatgcctggt ttgtggtgga ccccgagtca 480  
 ggggagaccc agatgacact gaccacagcg ggtccctcca ccccccgcct ctacatcggc 540  
 cgaacacagt atacggtcac catgcatgac ccaagagccc cagccctgcg ctggaacacc 600  
 acctaccgcc gctactcagc gcccccatg gatggctcac ccgggaaata catgagccac 660  
 ctggcgctct gtgggatggg cctgctgctc actgtggacc cagaaagtgg ggcagtgtctg 720  
 tggacacaag acctgggcat gcctgtgatg ggcgtttaca cctggcacca ggacggcctg 780  
 cgccagctgc cgcattcac cctggctcga gacactctgc atttcctcgc cctccgctgg 840  
 ggccacatcc gactgcctgc ctcaggcccc caggacacag ccacctctt ctctgccttg 900  
 gatacccagc tgctgatgac actgtatgta ggaaggatg aaactggctt ctatgtctct 960  
 aaagcactgg tccacacagg agtggccctg gtgcctcgtg gactgacct ggcccctaca 1020  
 gatggcccca ccacagatga ggtgacactc caagtctcag gagagcgaga gggctcacc 1080  
 agcactgctg ttagataccc ctcaggcagt gtggccctcc caagccagtg gctgctcatt 1140  
 ggacaccacg agctaccccc agtcctgcac actaccatgc tgaggggtcca tcccaccccg 1200  
 gggagtggaa ctgcagagac aagaccccca gagaacaccc agggcccagc cttcttcttg 1260  
 gagctattga gcctgagtcg agagaaactt tgggactccg agctgcatcc agaagaaaag 1320  
 attccggact cctacctggg gctgggaccc caagacctgc tggcagctag cctcactgct 1380  
 gtcctcctgg gaggtggat tctatttgtg atgaggcagc agccgcaggt ggtggagaag 1440

cagcaggaga cccccctggt acctgcagac actgctgaca tctcccagga tgcccagtcc 1500  
 ctgcactcgg gggtcaccct gaggagcaag aagaggcttc aaagtccttc gaagcaagcc 1560  
 cagccactcg acgaccctga agctgagcaa ctcaccgtag tggggaagat ttccttcaat 1620  
 cccaaggacg tgctgggcca cggggcaggc gggactttcg ttttccgggg acagtttgag 1680  
 ggacgagcag tggctgtcaa gcggtccttc cgcgagtgtt ttggcctggt tcggcgggaa 1740  
 gttcaactgc tgcaggagtc tgacaggcac cccaatgtgc tccgctactt ctgcaccgag 1800  
 cggggacccc agttccacta cattgccctg gagctctgcc gggcctcctt gcaggagtag 1860  
 gtagaaaacc cggacctgga tcgcgggggc ctggagcccg aggtggtgct gcagcagctg 1920  
 atgtctggcc tggcccacct gcattcttta cacatagtgc accgggacct gaagccaggc 1980  
 aatattctca tcaccgggcc tgacaccag ggcctgggca ggggtggtgct ttcagacttc 2040  
 ggcctctgca agaagctgcc tgctggccgc tgtagcttca gcctccactc cggcatcccc 2100  
 ggcacggaag gctggatggc gcccagctc ctgcagctcc tgccaccaa cagtcctacc 2160  
 agcgtctgtg acatcttctc tgcaggctgc gtgttctact acgtgctttc tgggtggcagc 2220  
 cacccttttg gagacagtct ttatcgccag gcaaaccatcc tcacaggggt tccctgtctg 2280  
 gctcacctgg aggaagaggt ccacgacaag gtggttgccc gggacctggt tgcagccatg 2340  
 ttgagcctac tgccacaggc acgcccctct gccccccagg tgcaggccca ccccttcttt 2400  
 tggagcagag ccaagcaact ccagttcttc caggatgtca gtgactggct ggagaaggag 2460  
 tctgagcagg agcccctgat gagggcactg gaggcaggag gctgcacggt ggtccgggac 2520  
 aactggcacg agcacatctc catgccgctg cagatagacc tgagaaagtt ccggtcctat 2580  
 aaggggacat cagtgcgaga cctgctccgt gctgtgagga acaagaagca ccactacagg 2640  
 gagctcccag ttgaggtgcg acaggcactt ggccaagtcc ctgacggctt cgtccagtac 2700  
 ttcacaaacc gcttcccaca gctgctcctc cacacgcacc gagtcatgag gagttgcgcc 2760  
 tctgagagcc tcttcctgcc ctactacca ccagactcag aggccagggg gccgtgccct 2820  
 ggggctgcag ggaggtgaag tgggccggag gccacacaaa tgggtctccat gctg 2874

<210> 126  
 <211> 925  
 <212> PRT  
 <213> Homo sapiens

<400> 126

Met Ala Ser Ala Val Arg Gly Ser Arg Pro Trp Pro Arg Leu Gly Leu  
 1 5 10 15  
 Gln Leu Gln Phe Ala Ala Leu Leu Leu Gly Thr Leu Ser Pro Gln Val  
 20 25 30  
 His Thr Leu Arg Pro Glu Asn Leu Leu Leu Val Ser Thr Leu Asp Gly  
 35 40 45  
 Ser Leu His Ala Leu Ser Lys Gln Thr Gly Asp Leu Lys Trp Thr Leu  
 50 55 60  
 Arg Asp Asp Pro Val Ile Glu Gly Pro Met Tyr Val Thr Glu Met Ala  
 65 70 75 80  
 Phe Leu Ser Asp Pro Ala Asp Gly Ser Leu Tyr Ile Leu Gly Thr Gln  
 85 90 95  
 Lys Gln Leu Gly Leu Met Lys Leu Pro Phe Thr Ile Pro Glu Leu Val  
 100 105 110  
 His Ala Ser Pro Cys Arg Ser Ser Asp Gly Val Phe Tyr Thr Gly Arg  
 115 120 125  
 Lys Gln Asp Ala Trp Phe Val Val Asp Pro Glu Ser Gly Glu Thr Gln  
 130 135 140  
 Met Thr Leu Thr Thr Ala Gly Pro Ser Thr Pro Arg Leu Tyr Ile Gly  
 145 150 155 160  
 Arg Thr Gln Tyr Thr Val Thr Met His Asp Pro Arg Ala Pro Ala Leu  
 165 170 175  
 Arg Trp Asn Thr Thr Tyr Arg Arg Tyr Ser Ala Pro Pro Met Asp Gly  
 180 185 190  
 Ser Pro Gly Lys Tyr Met Ser His Leu Ala Ser Cys Gly Met Gly Leu  
 195 200 205  
 Leu Leu Thr Val Asp Pro Glu Ser Gly Ala Val Leu Trp Thr Gln Asp  
 210 215 220



Leu Gly Met Pro Val Met Gly Val Tyr Thr Trp His Gln Asp Gly Leu  
 225 230 235 240

Arg Gln Leu Pro His Leu Thr Leu Ala Arg Asp Thr Leu His Phe Leu  
 245 250 255

Ala Leu Arg Trp Gly His Ile Arg Leu Pro Ala Ser Gly Pro Gln Asp  
 260 265 270

Thr Ala Thr Leu Phe Ser Ala Leu Asp Thr Gln Leu Leu Met Thr Leu  
 275 280 285

Tyr Val Gly Lys Asp Glu Thr Gly Phe Tyr Val Ser Lys Ala Leu Val  
 290 295 300

His Thr Gly Val Ala Leu Val Pro Arg Gly Leu Thr Leu Ala Pro Thr  
 305 310 315 320

Asp Gly Pro Thr Thr Asp Glu Val Thr Leu Gln Val Ser Gly Glu Arg  
 325 330 335

Glu Gly Ser Pro Ser Thr Ala Val Arg Tyr Pro Ser Gly Ser Val Ala  
 340 345 350

Leu Pro Ser Gln Trp Leu Leu Ile Gly His His Glu Leu Pro Pro Val  
 355 360 365

Leu His Thr Thr Met Leu Arg Val His Pro Thr Pro Gly Ser Gly Thr  
 370 375 380

Ala Glu Thr Arg Pro Pro Glu Asn Thr Gln Ala Pro Ala Phe Phe Leu  
 385 390 395 400

Glu Leu Leu Ser Leu Ser Arg Glu Lys Leu Trp Asp Ser Glu Leu His  
 405 410 415

Pro Glu Glu Lys Ile Pro Asp Ser Tyr Leu Gly Leu Gly Pro Gln Asp  
 420 425 430

Leu Leu Ala Ala Ser Leu Thr Ala Val Leu Leu Gly Gly Trp Ile Leu  
 435 440 445

Phe Val Met Arg Gln Gln Pro Gln Val Val Glu Lys Gln Gln Glu Thr  
 450 455 460

Pro Leu Val Pro Ala Asp Thr Ala Asp Ile Ser Gln Asp Ala Gln Ser  
 465 470 475 480

Leu His Ser Gly Val Thr Leu Arg Ser Lys Lys Arg Leu Gln Ser Pro  
 485 490 495

Ser Lys Gln Ala Gln Pro Leu Asp Asp Pro Glu Ala Glu Gln Leu Thr  
 500 505 510

Val Val Gly Lys Ile Ser Phe Asn Pro Lys Asp Val Leu Gly His Gly  
 515 520 525

Ala Gly Gly Thr Phe Val Phe Arg Gly Gln Phe Glu Gly Arg Ala Val  
 530 535 540

Ala Val Lys Arg Leu Leu Arg Glu Cys Phe Gly Leu Val Arg Arg Glu  
 545 550 555 560

Val Gln Leu Leu Gln Glu Ser Asp Arg His Pro Asn Val Leu Arg Tyr  
 565 570 575

Phe Cys Thr Glu Arg Gly Pro Gln Phe His Tyr Ile Ala Leu Glu Leu  
 580 585 590

Cys Arg Ala Ser Leu Gln Glu Tyr Val Glu Asn Pro Asp Leu Asp Arg  
 595 600 605

Gly Gly Leu Glu Pro Glu Val Val Leu Gln Gln Leu Met Ser Gly Leu  
 610 615 620

Ala His Leu His Ser Leu His Ile Val His Arg Asp Leu Lys Pro Gly  
 625 630 635 640

Asn Ile Leu Ile Thr Gly Pro Asp Thr Gln Gly Leu Gly Arg Val Val  
 645 650 655

Leu Ser Asp Phe Gly Leu Cys Lys Lys Leu Pro Ala Gly Arg Cys Ser  
 660 665 670

Phe Ser Leu His Ser Gly Ile Pro Gly Thr Glu Gly Trp Met Ala Pro  
 675 680 685

Glu Leu Leu Gln Leu Leu Pro Pro Asn Ser Pro Thr Ser Ala Val Asp  
 690 695 700

Ile Phe Ser Ala Gly Cys Val Phe Tyr Tyr Val Leu Ser Gly Gly Ser  
 705 710 715 720

His Pro Phe Gly Asp Ser Leu Tyr Arg Gln Ala Asn Ile Leu Thr Gly  
 725 730 735

Val Pro Cys Leu Ala His Leu Glu Glu Glu Val His Asp Lys Val Val  
 740 745 750

Ala Arg Asp Leu Val Ala Ala Met Leu Ser Leu Leu Pro Gln Ala Arg  
 755 760 765

Pro Ser Ala Pro Gln Val Leu Ala His Pro Phe Phe Trp Ser Arg Ala  
 770 775 780

Lys Gln Leu Gln Phe Phe Gln Asp Val Ser Asp Trp Leu Glu Lys Glu  
 785 790 795 800

Ser Glu Gln Glu Pro Leu Met Arg Ala Leu Glu Ala Gly Gly Cys Thr  
 805 810 815

Val Val Arg Asp Asn Trp His Glu His Ile Ser Met Pro Leu Gln Ile  
 820 825 830

Asp Leu Arg Lys Phe Arg Ser Tyr Lys Gly Thr Ser Val Arg Asp Leu  
 835 840 845

Leu Arg Ala Val Arg Asn Lys Lys His His Tyr Arg Glu Leu Pro Val  
 850 855 860

Glu Val Arg Gln Ala Leu Gly Gln Val Pro Asp Gly Phe Val Gln Tyr  
 865 870 875 880

Phe Thr Asn Arg Phe Pro Gln Leu Leu Leu His Thr His Arg Val Met  
 885 890 895

Arg Ser Cys Ala Ser Glu Ser Leu Phe Leu Pro Tyr Tyr Pro Pro Asp  
 900 905 910

Ser Glu Ala Arg Gly Pro Cys Pro Gly Ala Ala Gly Arg  
 915 920 925

<210> 127  
 <211> 5610  
 <212> DNA  
 <213> Homo sapiens

<400> 127  
 aacatttttg aaagatcact cagctttaac acaccttggc tgggtctgga taaaaaaaaa 60  
 gtgagcactg caaatttcta gaagaaaaca tcaggagaag aaagagagag ggggatttat 120  
 tcaaagttgt ttccaattcc ttcaaaacct caaaccaggt ggctatggta tggatgtaac 180  
 caagaaaaac aaacgagatg gaactgaagt cactgagaga attgtcactg aaacagtaac 240  
 cacaagactt acatccttac caccaaaagg cgggaccagc aatggctatg ctaaaacagc 300  
 ctctcttggg ggagggagcc ggctggagaa acaaagcctg actcatggca gcagcggcta 360  
 cataaactca actggaagca cagcaggcca tgcctccacc tctagttaca ggagggctca 420  
 ctacactgcc tccactctgc ccaactcccc aggctcaacc tttgaaagga aaactcacgt 480  
 taccgcgcat gcgtatgaag ggagctccag tggcaactct tctccggagt accctcggaa 540  
 ggaatttgca tcttcttcaa ccagaggacg gagtcaaaca cgagagagtg aaattcgagt 600  
 tcgactgcag agtgcgtccc catccacccg atggacagaa ttggatgatg ttaagcgttt 660  
 gctcaagggg agtcgatcgg caagtgtgag cccaccccg aattcctcca acacactccc 720  
 catccccaag aaaggcactg tggagaccaa aattgtgaca gcgagctccc agtcggtgtc 780  
 aggcacctac gatgcaacga tcctggatgc caaccttccc tcccatgtgt ggtcctccac 840  
 cctgcccgcg gggtcctcca tggggaccta tcacaacaac atgacaaccc agagctcatc 900  
 cctcctcaac accaatgcct actctgcggg atcagtcttc ggagttccaa acaacatggc 960  
 gtctgtctca ccactttgc accctggact cagcacatcc tcctcagtgt ttggcatgca 1020  
 gaacaatctg gccccagct tgaccacct gtcccatggc accaccacca cttccacagc 1080  
 atatggggtg aagaaaaaca tgccccagag tcctgcggct gtgaacactg gcgtttccac 1140  
 ctccgccgcc tgcaccacaa gtgtgcagag cgatgacctt ttgcacaagg actgcaagtt 1200  
 cctgatccta gagaaagaca acacacctgc taagaaggag atggagctgc tcatcatgac 1260

caaggacagc	gggaaggtct	ttacagcctc	ccctgccagc	atcgctgcaa	cttcttttttc	1320
agaagacacc	ctaaaaaaag	aaaagcaagc	tgcctacaat	gctgactcag	gcctaaaagc	1380
cgaagctaata	ggagacctga	agactgtgtc	cacaaagggc	aagaccacca	ctgcagatat	1440
ccacagctac	agcagcagtg	gtggtggtgg	cagtggagga	ggtggcggtg	ttggtggcgc	1500
tggcggcggc	ccttggggac	cagcgccagc	ctggtgcccc	tgcggctcct	gctgcagctg	1560
gtggaagtgg	ctgctggggc	tgctgctcac	ctggctgcta	ctcctggggc	tgctcttcgg	1620
cctcattgct	ctggcgagg	aggtgaggaa	gctgaaggcg	cgtgtggatg	agctggagag	1680
gatcaggagg	agcatactgc	cctatgggga	cagcatggat	agaatagaaa	aggaccgcct	1740
ccagggcatg	gcacccgcgg	cgggagcaga	cctggacaaa	attgggctgc	acagtgcacg	1800
ccaggaggag	ctctggatgt	tcgtgaggaa	gaagctaata	atggaacagg	aaaatggaaa	1860
tctccgagga	agccctggcc	ctaaaggtga	catgggaagt	ccaggcccta	aaggagatcg	1920
agggttccct	gggactccag	gtatccctgg	gcccttgggc	caccaggtc	cacaaggacc	1980
aaagggtaa	aaaggcagcg	tgggagatcc	tggcatggaa	ggcccatgg	gccagagagg	2040
gcgagaaggc	cccatgggac	ctcgtggtga	ggcagggcct	cctggatctg	gagagaaagg	2100
ggaaagaggg	gctgctggtg	aaccaggtcc	tcatggccca	cctggtgtcc	caggttctgt	2160
gggtcccaaa	ggttccagcg	gctctcctgg	cccacagggc	cctccaggtc	ctgtaggtct	2220
ccaagggctc	cgaggtgaag	taggacttcc	tggtgtcaaa	ggtgacaaag	gaccaatggg	2280
accaccagga	cccaaaggtg	accaggggtga	gaaaggacct	cgaggcctca	caggcgagcc	2340
tggcatgaga	ggtttgcctg	gtgctggttg	tgagcccggg	gctaaaggag	caatgggtcc	2400
tgctggccca	gacggacacc	aaggcccaag	aggtgaacaa	ggtcttactg	ggatgcctgg	2460
aatcgtggc	ccaccaggac	cttctggaga	cccaggaaag	ccaggtctca	caggacccca	2520
gggacctcag	ggacttcccg	gtacccctgg	cgcaccagga	ataaaagggtg	aaccaggagc	2580
tccaggcaag	atcgtgactt	cggaggggtc	atcgatgctc	actgtcccag	gccccccagg	2640
acctcctgga	gccatgggac	ccccaggacc	tccaggtgcc	ccaggccctg	cgggcccagc	2700
tggtctccca	ggacatcaag	aagttcttaa	tttacaaggt	ccccagggcc	caccgggccc	2760
acgtgggcca	ccagggcctt	ccattccagg	cccaccagga	ccccagggcc	caccaggggga	2820
gggtttgcca	ggcccaccag	gcccaccagg	atcgttccctg	tccaactcag	aaaccttcct	2880
cttcggcccc	ccaggcccac	ctggccccc	aggtcccaag	ggagaccaag	gtcccccagg	2940

cccagagga caccaaggcg agcaaggcct cccaggtttc tcaacctcag ggtccagttc 3000  
 tttcggactc aaccttcagg gaccaccagg cccacctggc cccagggac caaaagggtga 3060  
 caaaggatgat ccgggtgttc caggggctct tggcattcct agtggtcctt ctgaaggggg 3120  
 atcatcaagt accatgtacg tgtcaggccc gccaggggccc cctggggccc ctgggcctcc 3180  
 gggctctatc agcagctctg gccaggagat tcagcagtac atctctgagt acatgcagag 3240  
 tgacagtatt agatcttacc tatccggagt tcaggggtccc ccaggcccac ctgggtcccc 3300  
 aggacctgtc accaccatca caggcgagac tttcgactac tcagagctgg caagccacgt 3360  
 tgtgagctac ttacggactt cgggggtacg tgtcagcttg ttctcgtcct ccattctctc 3420  
 tgaagacatc ctggctgtgc tgcagcggga tgacgtgcgt cagtacctac gtcagtactt 3480  
 gatggggcct cgggggtccg cagggccacc aggagccagt ggagatgggt ccctcctgtc 3540  
 tttggactat gcagagctga gtagtcgcat tctcagctac atgtcagatt ctgggatcag 3600  
 cattgggctt cctgggtccc cggggccccc tggcttgccg ggaacctcct atgaggagct 3660  
 cctctccttg ctgcgagggt ctgaattcag aggcacgtt ggacccccag gtccccggg 3720  
 tccaccaggg atcccaggca atgtgtggtc cagcatcagc gtggaggacc tctcgtctta 3780  
 ctacatact gccggcttgt cattcatccc aggccctcca ggacctcctg gtccccagg 3840  
 gcctcgaggg cccccgggtg tctcaggagc cctggcaacc tatgcagctg aaaacagcga 3900  
 cagcttccgg agcgagctga tcagctacct cacaagtcct gatgtgcgca gcttcattgt 3960  
 tggcccccca ggccctcctg ggccgcaggg accccctggg gacagccgcc tctgtccac 4020  
 ggatgcctcc cacagtggg gtagcagctc ctctcacac agctcatctg tcaggcgggg 4080  
 cagctcctac agctcttcca tgagcacagg aggaggtggt gcaggctccc tgggtgcagg 4140  
 cgggtgcctt ggtgaagctg caggagacag ggggtccctat ggcactgaca tcggcccagg 4200  
 cggaggctat ggggcagcag cagaaggcgg catgtatgct ggcaatggcg gactattggg 4260  
 agctgacttt gctggagatc tggattacaa tgagctggct gtgagggtgt cagagagcat 4320  
 gcagcgtcag ggctactgc aagggatggc ctacactgtc cagggcccac caggccagcc 4380  
 tgggccacag gggccaccg gcatcagcaa ggtcttctct gctacagca acgtgactgc 4440  
 ggacctcatg gacttcttcc aaacttatgg agccattcaa ggacccccctg ggcaaaaagg 4500  
 agagatgggc actccaggac ccaaagggtga caggggccct gctgggccac caggatcatc 4560  
 tggggcacct ggccctcgag gacacaaggg agaaaaagga gacaaagggtg accaagtcta 4620

```

tgctggggcg agaaggagaa gaagtattgc tgtcaagccg tgagctagcc atggcaggac 4680
agctcctgga ccaggtctca taatgcatgt ggcacttagg tccaaggtct ccagaggggtg 4740
aaagctggag tctgtcaatg tcctactgag acagcacagc caacctagct agcaacattt 4800
gttttagtct gaacaatata tacttataga attcagtcaa agatacacia tctgaaacag 4860
cttcatgggg tggactctaa cagtagttgc aatgttttag aatgagactt acttctctgc 4920
tatctagatc tgaactcctt ggcttcttta cttagttcaa gcccagcct aggaaagcca 4980
gttacataaa agttggctca ggagtcttag agctttacct aaatatgagc ccagaaaacg 5040
gaggatgggg gtggggcgcc ttcctggagg tgacacttga tgggggtgtg ttctggttac 5100
tgttctaagg ctgtgccatc agctccttcc tcccctgttc attctgcatt ctctagtcag 5160
ttggctaaga agtgactctt gcaactaaaa aaattaagaa attcacttcc cctctaggag 5220
gtgatgatag ggtttctaata gggtatatgt atatcacatt cccatttgct tagaaagtct 5280
gattgtagct atgattgtcc gtaggcccac actagagttc atggatatgt tatactgaac 5340
caggccagag caaacagaaa aagaaggttg agggcaatgg acaaggaagg aataaagga 5400
gaagagggaa aacagaaaac ctgatgctgg ggacacagca tcagctcaag acgtcacct 5460
ccattctgca ctcagaaaat ggcacttggg ggactgggag cagttggtct ttaaccactt 5520
ttcaatgtct aaaaacattt gtttgtgggc tataagatga aacatcattt caatcgtaaa 5580
atttccatt aaagaagttt ttttttctaa 5610

```

<210> 128  
 <211> 1497  
 <212> PRT  
 <213> Homo sapiens

<400> 128

```

Met Asp Val Thr Lys Lys Asn Lys Arg Asp Gly Thr Glu Val Thr Glu
1           5           10           15

```

```

Arg Ile Val Thr Glu Thr Val Thr Thr Arg Leu Thr Ser Leu Pro Pro
          20           25           30

```

```

Lys Gly Gly Thr Ser Asn Gly Tyr Ala Lys Thr Ala Ser Leu Gly Gly
          35           40           45

```

```

Gly Ser Arg Leu Glu Lys Gln Ser Leu Thr His Gly Ser Ser Gly Tyr
          50           55           60

```

Ile Asn Ser Thr Gly Ser Thr Arg Gly His Ala Ser Thr Ser Ser Tyr  
 65 70 75 80  
 Arg Arg Ala His Ser Pro Ala Ser Thr Leu Pro Asn Ser Pro Gly Ser  
 85 90 95  
 Thr Phe Glu Arg Lys Thr His Val Thr Arg His Ala Tyr Glu Gly Ser  
 100 105 110  
 Ser Ser Gly Asn Ser Ser Pro Glu Tyr Pro Arg Lys Glu Phe Ala Ser  
 115 120 125  
 Ser Ser Thr Arg Gly Arg Ser Gln Thr Arg Glu Ser Glu Ile Arg Val  
 130 135 140  
 Arg Leu Gln Ser Ala Ser Pro Ser Thr Arg Trp Thr Glu Leu Asp Asp  
 145 150 155 160  
 Val Lys Arg Leu Leu Lys Gly Ser Arg Ser Ala Ser Val Ser Pro Thr  
 165 170 175  
 Arg Asn Ser Ser Asn Thr Leu Pro Ile Pro Lys Lys Gly Thr Val Glu  
 180 185 190  
 Thr Lys Ile Val Thr Ala Ser Ser Gln Ser Val Ser Gly Thr Tyr Asp  
 195 200 205  
 Ala Thr Ile Leu Asp Ala Asn Leu Pro Ser His Val Trp Ser Ser Thr  
 210 215 220  
 Leu Pro Ala Gly Ser Ser Met Gly Thr Tyr His Asn Asn Met Thr Thr  
 225 230 235 240  
 Gln Ser Ser Ser Leu Leu Asn Thr Asn Ala Tyr Ser Ala Gly Ser Val  
 245 250 255  
 Phe Gly Val Pro Asn Asn Met Ala Ser Cys Ser Pro Thr Leu His Pro  
 260 265 270  
 Gly Leu Ser Thr Ser Ser Ser Val Phe Gly Met Gln Asn Asn Leu Ala  
 275 280 285



Pro Ser Leu Thr Thr Leu Ser His Gly Thr Thr Thr Thr Ser Thr Ala  
 290 295 300

Tyr Gly Val Lys Lys Asn Met Pro Gln Ser Pro Ala Ala Val Asn Thr  
 305 310 315 320

Gly Val Ser Thr Ser Ala Ala Cys Thr Thr Ser Val Gln Ser Asp Asp  
 325 330 335

Leu Leu His Lys Asp Cys Lys Phe Leu Ile Leu Glu Lys Asp Asn Thr  
 340 345 350

Pro Ala Lys Lys Glu Met Glu Leu Leu Ile Met Thr Lys Asp Ser Gly  
 355 360 365

Lys Val Phe Thr Ala Ser Pro Ala Ser Ile Ala Ala Thr Ser Phe Ser  
 370 375 380

Glu Asp Thr Leu Lys Lys Glu Lys Gln Ala Ala Tyr Asn Ala Asp Ser  
 385 390 395 400

Gly Leu Lys Ala Glu Ala Asn Gly Asp Leu Lys Thr Val Ser Thr Lys  
 405 410 415

Gly Lys Thr Thr Thr Ala Asp Ile His Ser Tyr Ser Ser Ser Gly Gly  
 420 425 430

Gly Gly Ser Gly Gly Gly Gly Gly Val Gly Gly Ala Gly Gly Gly Pro  
 435 440 445

Trp Gly Pro Ala Pro Ala Trp Cys Pro Cys Gly Ser Cys Cys Ser Trp  
 450 455 460

Trp Lys Trp Leu Leu Gly Leu Leu Leu Thr Trp Leu Leu Leu Leu Gly  
 465 470 475 480

Leu Leu Phe Gly Leu Ile Ala Leu Ala Glu Glu Val Arg Lys Leu Lys  
 485 490 495

Ala Arg Val Asp Glu Leu Glu Arg Ile Arg Arg Ser Ile Leu Pro Tyr  
 500 505 510

Gly Asp Ser Met Asp Arg Ile Glu Lys Asp Arg Leu Gln Gly Met Ala  
 515 520 525

Pro Ala Ala Gly Ala Asp Leu Asp Lys Ile Gly Leu His Ser Asp Ser  
 530 535 540

Gln Glu Glu Leu Trp Met Phe Val Arg Lys Lys Leu Met Met Glu Gln  
 545 550 555 560

Glu Asn Gly Asn Leu Arg Gly Ser Pro Gly Pro Lys Gly Asp Met Gly  
 565 570 575

Ser Pro Gly Pro Lys Gly Asp Arg Gly Phe Pro Gly Thr Pro Gly Ile  
 580 585 590

Pro Gly Pro Leu Gly His Pro Gly Pro Gln Gly Pro Lys Gly Gln Lys  
 595 600 605

Gly Ser Val Gly Asp Pro Gly Met Glu Gly Pro Met Gly Gln Arg Gly  
 610 615 620

Arg Glu Gly Pro Met Gly Pro Arg Gly Glu Ala Gly Pro Pro Gly Ser  
 625 630 635 640

Gly Glu Lys Gly Glu Arg Gly Ala Ala Gly Glu Pro Gly Pro His Gly  
 645 650 655

Pro Pro Gly Val Pro Gly Ser Val Gly Pro Lys Gly Ser Ser Gly Ser  
 660 665 670

Pro Gly Pro Gln Gly Pro Pro Gly Pro Val Gly Leu Gln Gly Leu Arg  
 675 680 685

Gly Glu Val Gly Leu Pro Gly Val Lys Gly Asp Lys Gly Pro Met Gly  
 690 695 700

Pro Pro Gly Pro Lys Gly Asp Gln Gly Glu Lys Gly Pro Arg Gly Leu  
 705 710 715 720

Thr Gly Glu Pro Gly Met Arg Gly Leu Pro Gly Ala Val Gly Glu Pro  
 725 730 735

Gly Ala Lys Gly Ala Met Gly Pro Ala Gly Pro Asp Gly His Gln Gly  
 740 745 750  
 Pro Arg Gly Glu Gln Gly Leu Thr Gly Met Pro Gly Ile Arg Gly Pro  
 755 760 765  
 Pro Gly Pro Ser Gly Asp Pro Gly Lys Pro Gly Leu Thr Gly Pro Gln  
 770 775 780  
 Gly Pro Gln Gly Leu Pro Gly Thr Pro Gly Arg Pro Gly Ile Lys Gly  
 785 790 795 800  
 Glu Pro Gly Ala Pro Gly Lys Ile Val Thr Ser Glu Gly Ser Ser Met  
 805 810 815  
 Leu Thr Val Pro Gly Pro Pro Gly Pro Pro Gly Ala Met Gly Pro Pro  
 820 825 830  
 Gly Pro Pro Gly Ala Pro Gly Pro Ala Gly Pro Ala Gly Leu Pro Gly  
 835 840 845  
 His Gln Glu Val Leu Asn Leu Gln Gly Pro Pro Gly Pro Pro Gly Pro  
 850 855 860  
 Arg Gly Pro Pro Gly Pro Ser Ile Pro Gly Pro Pro Gly Pro Arg Gly  
 865 870 875 880  
 Pro Pro Gly Glu Gly Leu Pro Gly Pro Pro Gly Pro Pro Gly Ser Phe  
 885 890 895  
 Leu Ser Asn Ser Glu Thr Phe Leu Phe Gly Pro Pro Gly Pro Pro Gly  
 900 905 910  
 Pro Pro Gly Pro Lys Gly Asp Gln Gly Pro Pro Gly Pro Arg Gly His  
 915 920 925  
 Gln Gly Glu Gln Gly Leu Pro Gly Phe Ser Thr Ser Gly Ser Ser Ser  
 930 935 940  
 Phe Gly Leu Asn Leu Gln Gly Pro Pro Gly Pro Pro Gly Pro Gln Gly  
 945 950 955 960

Pro Lys Gly Asp Lys Gly Asp Pro Gly Val Pro Gly Ala Leu Gly Ile  
                           965                          970                          975

Pro Ser Gly Pro Ser Glu Gly Gly Ser Ser Ser Thr Met Tyr Val Ser  
                           980                          985                          990

Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Ser Ile Ser  
                           995                          1000                          1005

Ser Ser Gly Gln Glu Ile Gln Gln Tyr Ile Ser Glu Tyr Met Gln  
           1010                          1015                          1020

Ser Asp Ser Ile Arg Ser Tyr Leu Ser Gly Val Gln Gly Pro Pro  
           1025                          1030                          1035

Gly Pro Pro Gly Pro Pro Gly Pro Val Thr Thr Ile Thr Gly Glu  
           1040                          1045                          1050

Thr Phe Asp Tyr Ser Glu Leu Ala Ser His Val Val Ser Tyr Leu  
           1055                          1060                          1065

Arg Thr Ser Gly Tyr Gly Val Ser Leu Phe Ser Ser Ser Ile Ser  
           1070                          1075                          1080

Ser Glu Asp Ile Leu Ala Val Leu Gln Arg Asp Asp Val Arg Gln  
           1085                          1090                          1095

Tyr Leu Arg Gln Tyr Leu Met Gly Pro Arg Gly Pro Pro Gly Pro  
           1100                          1105                          1110

Pro Gly Ala Ser Gly Asp Gly Ser Leu Leu Ser Leu Asp Tyr Ala  
           1115                          1120                          1125

Glu Leu Ser Ser Arg Ile Leu Ser Tyr Met Ser Ser Ser Gly Ile  
           1130                          1135                          1140

Ser Ile Gly Leu Pro Gly Pro Pro Gly Pro Pro Gly Leu Pro Gly  
           1145                          1150                          1155

Thr Ser Tyr Glu Glu Leu Leu Ser Leu Leu Arg Gly Ser Glu Phe  
           1160                          1165                          1170

Arg Gly 1175	Ile Val Gly	Pro Pro 1180	Gly Pro Pro Gly	Pro 1185	Pro Gly Ile
Pro Gly 1190	Asn Val Trp Ser	Ser 1195	Ile Ser Val Glu	Asp 1200	Leu Ser Ser
Tyr Leu 1205	His Thr Ala Gly	Leu 1210	Ser Phe Ile Pro	Gly 1215	Pro Pro Gly
Pro Pro 1220	Gly Pro Pro Gly	Pro 1225	Arg Gly Pro Pro	Gly 1230	Val Ser Gly
Ala Leu 1235	Ala Thr Tyr Ala	Ala 1240	Glu Asn Ser Asp	Ser 1245	Phe Arg Ser
Glu Leu 1250	Ile Ser Tyr Leu	Thr 1255	Ser Pro Asp Val	Arg 1260	Ser Phe Ile
Val Gly 1265	Pro Pro Gly Pro	Pro 1270	Gly Pro Gln Gly	Pro 1275	Pro Gly Asp
Ser Arg 1280	Leu Leu Ser Thr	Asp 1285	Ala Ser His Ser	Arg 1290	Gly Ser Ser
Ser Ser 1295	Ser His Ser Ser	Ser 1300	Val Arg Arg Gly	Ser 1305	Ser Tyr Ser
Ser Ser 1310	Met Ser Thr Gly	Gly 1315	Gly Gly Ala Gly	Ser 1320	Leu Gly Ala
Gly Gly 1325	Ala Phe Gly Glu	Ala 1330	Ala Gly Asp Arg	Gly 1335	Pro Tyr Gly
Thr Asp 1340	Ile Gly Pro Gly	Gly 1345	Gly Tyr Gly Ala	Ala 1350	Ala Glu Gly
Gly Met 1355	Tyr Ala Gly Asn	Gly 1360	Gly Leu Leu Gly	Ala 1365	Asp Phe Ala
Gly Asp 1370	Leu Asp Tyr Asn	Glu 1375	Leu Ala Val Arg	Val 1380	Ser Glu Ser

Met Gln Arg Gln Gly Leu Leu Gln Gly Met Ala Tyr Thr Val Gln  
 1385 1390 1395

Gly Pro Pro Gly Gln Pro Gly Pro Gln Gly Pro Pro Gly Ile Ser  
 1400 1405 1410

Lys Val Phe Ser Ala Tyr Ser Asn Val Thr Ala Asp Leu Met Asp  
 1415 1420 1425

Phe Phe Gln Thr Tyr Gly Ala Ile Gln Gly Pro Pro Gly Gln Lys  
 1430 1435 1440

Gly Glu Met Gly Thr Pro Gly Pro Lys Gly Asp Arg Gly Pro Ala  
 1445 1450 1455

Gly Pro Pro Gly His Pro Gly Pro Pro Gly Pro Arg Gly His Lys  
 1460 1465 1470

Gly Glu Lys Gly Asp Lys Gly Asp Gln Val Tyr Ala Gly Arg Arg  
 1475 1480 1485

Arg Arg Arg Ser Ile Ala Val Lys Pro  
 1490 1495

<210> 129  
 <211> 460  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (79)..(79)  
 <223> n = unknown

<400> 129  
 tttttttttt tctaaacctt attggaagcc agcagttttt ctcacaaggg tttcccgcac 60  
 ccctctgcct ccatgtctnt ttcctggccc agagagactg cctccctcca aaggagagga 120  
 agccttcccc tcacaccttc aaatgccctt cagtgatctg tagaacaact cggggcatat 180  
 tcaagaaggg caaaacttca tgcctcttgc ccctcaatcc tcctttccct ttggtttggt 240  
 ttccttactt cttgccaaaa aacagctacc tttggcaggg aagttattac aatccattgc 300  
 aagtacttcc tccaataatg aacacaacaa aatcctttct ttattcattt aaagcacgaa 360

gctggccctc ttacaaaata ccctgttttt aataaatcct cggtaataga catccattca 420  
cgagaataaa gtgggtacat tggagctgaa gctggtggta 460

<210> 130  
<211> 50  
<212> PRT  
<213> Homo sapiens

<400> 130

Met Pro Leu Ala Pro Gln Ser Ser Phe Pro Phe Gly Leu Val Ser Leu  
1 5 10 15

Leu Leu Ala Lys Lys Gln Leu Pro Leu Ala Gly Lys Leu Leu Gln Ser  
20 25 30

Ile Ala Ser Thr Ser Ser Asn Asn Glu His Asn Lys Ile Leu Ser Leu  
35 40 45

Phe Ile  
50

<210> 131  
<211> 1017  
<212> DNA  
<213> Homo sapiens

<400> 131

ttgcttgagc cagcatgtcg cggaggaagc aagcgaagcc tcaacatttc caatccgacc 60  
ccgaagtggc ctcgctcccc cggcgagatg gagacacaga aaaggggtcaa ccgagtcgcc 120  
ctactaagag caaggatgcc cacgtctgtg gccggtgctg tgccgagttc tttgaattat 180  
cagatcttct gctccacaag aagaactgta ctaaaaatca attagtttta atcgtaaattg 240  
aaaatccagc ctccccaccc gaaaccttct cccccagccc cctcctgat aatcctgatg 300  
aacaaatgaa tgacacagtt aacaaaacag atcaagtgga ctgcagcgac ctttcagaac 360  
acaacggact tgacagggaa gagtccatgg aggtggaggc cccggttgct aacaaaagcg 420  
gcagcggcac ttccagcggc agccacagca gtaccgcccc aagcagcagc agcagcagca 480  
gcagcagcag cggcggcggc ggcagctcct ccacaggtac ctgagcgatc acaacctctc 540  
tacctcaact cggggacctg acaacactgg gcaacttctc cgtaatcaac agcaacgtca 600  
tcacgagaa cctccagagc accaaggtgg cgggtggcca gttctcccag gaagcgaggt 660

gcggcggggc ctctgggggc aagctggccg tcccagccct catggaacaa ctctagctc 720  
 tgcagcagca gcagatccac cagctgcaat tgatcgaaca gattcgtcac caaatattgc 780  
 tggttggttc tcagaatgca gacttgccaa catcttctag tccttctcaa ggtactttac 840  
 gaacatctgc caaaccctt gtcccacgct aagttcccat ttatctcagc agctgggcag 900  
 caacaagctt ggattgggcc cagaagccct cgccagccca ttctgccaag aattaattgg 960  
 gtggtggaaa acggctatcc cccaattcc aaggctaact ttaaaaaacc agttttt 1017

<210> 132  
 <211> 285  
 <212> PRT  
 <213> Homo sapiens

<400> 132

Met Ser Arg Arg Lys Gln Ala Lys Pro Gln His Phe Gln Ser Asp Pro  
 1 5 10 15

Glu Val Ala Ser Leu Pro Arg Arg Asp Gly Asp Thr Glu Lys Gly Gln  
 20 25 30

Pro Ser Arg Pro Thr Lys Ser Lys Asp Ala His Val Cys Gly Arg Cys  
 35 40 45

Cys Ala Glu Phe Phe Glu Leu Ser Asp Leu Leu Leu His Lys Lys Asn  
 50 55 60

Cys Thr Lys Asn Gln Leu Val Leu Ile Val Asn Glu Asn Pro Ala Ser  
 65 70 75 80

Pro Pro Glu Thr Phe Ser Pro Ser Pro Pro Pro Asp Asn Pro Asp Glu  
 85 90 95

Gln Met Asn Asp Thr Val Asn Lys Thr Asp Gln Val Asp Cys Ser Asp  
 100 105 110

Leu Ser Glu His Asn Gly Leu Asp Arg Glu Glu Ser Met Glu Val Glu  
 115 120 125

Ala Pro Val Ala Asn Lys Ser Gly Ser Gly Thr Ser Ser Gly Ser His  
 130 135 140



Ser Ser Thr Ala Pro Ser Ser Ser Ser Ser Ser Ser Ser Ser Gly  
 145 150 155 160

Gly Gly Gly Ser Ser Ser Thr Gly Thr Ser Ala Ile Thr Thr Ser Leu  
 165 170 175

Pro Gln Leu Gly Asp Leu Thr Thr Leu Gly Asn Phe Ser Val Ile Asn  
 180 185 190

Ser Asn Val Ile Ile Glu Asn Leu Gln Ser Thr Lys Val Ala Val Ala  
 195 200 205

Gln Phe Ser Gln Glu Ala Arg Cys Gly Gly Ala Ser Gly Gly Lys Leu  
 210 215 220

Ala Val Pro Ala Leu Met Glu Gln Leu Leu Ala Leu Gln Gln Gln Gln  
 225 230 235 240

Ile His Gln Leu Gln Leu Ile Glu Gln Ile Arg His Gln Ile Leu Leu  
 245 250 255

Leu Ala Ser Gln Asn Ala Asp Leu Pro Thr Ser Ser Ser Pro Ser Gln  
 260 265 270

Gly Thr Leu Arg Thr Ser Ala Lys Pro Leu Val Pro Arg  
 275 280 285

<210> 133  
 <211> 482  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (476)..(476)  
 <223> n = unknown

<400> 133  
 ctaggaagat ggcgcacccg gcaatgttcc ctggaagggg cagcggtagt ggcagcgcacat 60  
 ctgctctcaa tgcagcaggt accggcgctcg gtagtaatgc cacatcttcc gaggattttc 120  
 cgcctccgtc gctgcttcag ccgccgcccc ctgcagcatc ttctacgctg ggaccacagc 180  
 ctccgcctcc acaaagcctg aacctccttt cgcaggctca gctgcaggca cagctcattg 240

cgccagggcgg aactcaaatg aaaaagaaaa gtggcttcca gataactagc gttactcctg 300  
 ctcagatctc cgctagtatc agctctaaca acagtatagc agaggacact gagagctatg 360  
 atgatctgga tgaatctcac acggaagatc tctcttcttc ggagatcctt gatgtgtcac 420  
 tttccagggc tactgactta ggggagcccg aacgcagctc ctcagaagag acctanataa 480  
 ct 482

<210> 134  
 <211> 158  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> MISC\_FEATURE  
 <222> (156)..(156)  
 <223> X = unknown

<400> 134

Met Ala His Pro Ala Met Phe Pro Arg Arg Gly Ser Gly Ser Gly Ser  
 1 5 10 15

Ala Ser Ala Leu Asn Ala Ala Gly Thr Gly Val Gly Ser Asn Ala Thr  
 20 25 30

Ser Ser Glu Asp Phe Pro Pro Pro Ser Leu Leu Gln Pro Pro Pro Pro  
 35 40 45

Ala Ala Ser Ser Thr Ser Gly Pro Gln Pro Pro Pro Pro Gln Ser Leu  
 50 55 60

Asn Leu Leu Ser Gln Ala Gln Leu Gln Ala Gln Leu Ile Ala Pro Gly  
 65 70 75 80

Gly Thr Gln Met Lys Lys Lys Ser Gly Phe Gln Ile Thr Ser Val Thr  
 85 90 95

Pro Ala Gln Ile Ser Ala Ser Ile Ser Ser Asn Asn Ser Ile Ala Glu  
 100 105 110

Asp Thr Glu Ser Tyr Asp Asp Leu Asp Glu Ser His Thr Glu Asp Leu  
 115 120 125

Ser Ser Ser Glu Ile Leu Asp Val Ser Leu Ser Arg Ala Thr Asp Leu  
 130 135 140

Gly Glu Pro Glu Arg Ser Ser Ser Glu Glu Thr Xaa Ile Thr  
 145 150 155

<210> 135  
 <211> 391  
 <212> DNA  
 <213> Homo sapiens

<400> 135  
 ttttttttca ttgtgaaaaa atgcagcaat gtaattttta catctatgtc tagagctaca 60  
 gcttgctttt gattttttact cagcaaatgc ttggtcaata catggaaatc tacttctttt 120  
 taactaatgc atagcattct atccaatgga tgccctatag ttttttatcc aggccatatt 180  
 gaccgacatt taagcaattt caaatctttt actattgcaa acaatgctgc aactcagctt 240  
 tttacatgcg cctttctgca catgggcaaa cattcctcta gaaagcaaga aataaaattg 300  
 ctgggttgaa agatgtgtgc attttcagtg ttaataatgt caaattagcc tctaacaaga 360  
 tggtgcctat ttcattttact atcagaaatg g 391

<210> 136  
 <211> 60  
 <212> PRT  
 <213> Homo sapiens

<400> 136

Met His Ser Ile Leu Ser Asn Gly Cys Pro Ile Val Phe Tyr Pro Gly  
 1 5 10 15

His Ile Asp Arg His Leu Ser Asn Phe Lys Ser Phe Thr Ile Ala Asn  
 20 25 30

Asn Ala Ala Thr Gln Leu Phe Thr Cys Ala Phe Leu His Met Gly Lys  
 35 40 45

His Ser Ser Arg Lys Gln Glu Ile Lys Leu Leu Gly  
 50 55 60

<210> 137  
 <211> 396  
 <212> DNA  
 <213> Homo sapiens

<400> 137  
 ttttttttta tttgaattca atatattggt gatgacagtg tgttgattta aaagagtaaa 60  
 gagaaacagt ctttgtatta caatacagtt cagatatgta ttaatcatgc tacacaacag 120  
 gggcagagtg cacattaaaa tccaaagggtg agcccagctt ttatttcaac caatatcttt 180  
 ctctcttttt ctctagcaaa cgatttcaca gtatttccta aaaacagaag aaccacacatc 240  
 tgaaacattg gtagtttggg gtgcatcaca agctctcata ttagaaga aactgtaata 300  
 tgttacaggc catgaggctg tagtgattct cagtgtgctg tactgttaaa aggtagatct 360  
 ccaaaataat aaaaagaggt gcgttatttg ttggag 396

<210> 138  
 <211> 3254  
 <212> DNA  
 <213> Homo sapiens

<400> 138  
 ggcggcggcc gcgcgctgct cggggcccgga ctgcggcgcg agggcggcgc gggagcgacg 60  
 ctggcccgga ccgaggaaac tatgccgcag acgtccgttg tcttctccag catccttggg 120  
 cccagctgta gcggacaggt gcagcctggc atgggggagc gtggaggcgg gcccggtggc 180  
 ggctccgggg acctcatctt ccaagatgga cacctcatct ctgggtccct ggaggccctg 240  
 atggagcacc ttgttccac ggtggactat taccgcgata ggacgtacat cttcaccttt 300  
 ctctgagct cccgggtctt tatgccccct catgacctgc tggcccgctg ggggcagatc 360  
 tgcgtggagc agaagcagca gctggaagcc gggcctgaaa aggccaagct gaagtctttc 420  
 tcagccaaga tcgtgcagct cctgaaggag tggaccgagg ccttccccta tgacttccag 480  
 gatgagaagg ccatggccga gctgaaagcc atcacacacc gtgtcaccca gtgtgatgag 540  
 gagaatggca cagtgaagaa ggccattgcc cagatgacac agagcctgtt gctgtccttg 600  
 gctgcccgga gccagctcca ggaactgcga gagaagctcc ggccaccggc ttagacaag 660  
 gggcccatcc tcaagaccaa gccaccagcc gccagaagg acatcctggg cgtgtgctgc 720  
 gacccoctgg tgctggccca gcagctgact cacattgagc tggacagggt cagcagcatt 780  
 taccctgagg acttgatgca gatcgtcagc cacatggact cattggacaa ccacaggtgc 840  
 cgaggggacc tgaccaagac ctacagcctg gaggcctatg acaactggtt caactgcctg 900  
 agcatgctgg tggccactga ggtgtgccgg gtggtgaaga agaaacaccg gaccgcgatg 960  
 ttggagttct tcattgatgt ggcccgggag tgcttcaaca tcgggaactt caactccatg 1020

atggccatca tctctggcat gaacctcagt cctgtggcaa ggctgaagaa aacttgggtcc	1080
aaggtcaaga cagccaagtt tgatgtcttg gagcatcaca tggacccgtc cagcaacttc	1140
tgcaactacc gtacagccct gcagggggcc acgcagaggt cccagatggc caacagcagc	1200
cgtgaaaaga tcgtcatccc tgtgttcaac ctcttcgtta aggacatcta cttcctgcac	1260
aaaatccata ccaaccacct gcccaacggg cacattaact ttaagaaatt ctgggagatc	1320
tccagacaga tccatgagtt catgacatgg acacaggtag agtgtccttt cgagaaggac	1380
aagaagattc agagttacct gctcacggcg cccatctaca gcgaggaagc tctcttcgtc	1440
gcctcctttg aaagtgaggg tcccagagaac cacgtggaaa aagacagctg gaagaccctc	1500
aggaccaccc ttctgaacag agcctgaggc ggatgcagcc cgcgacgcca gaggaagcac	1560
gtgcactaac tgggttttaa ttttgactga tgtgggttga gatgaggagg cctcactggt	1620
tggggtccat tttgtatata acttttatga gaaaaaatg gtaattatct cacgcatcaa	1680
cctttggcac ttacaaagtt tttttgttt attttaata acagggcagg gccttgcttt	1740
ggggaggggg aggggagagt atcatgggag atggtatcca tgataacatc ttattctaatt	1800
gaaatgtaga tttttatctt ctacttttga ttattgacat cttatgaaaa aaatatttta	1860
aaaaaccag ccaaaaccaa cgtgagccct gcctgctcgg acgcctttcc agccagtgtc	1920
tctgacgtcg gggttagtgc cttagagggg actgggggtct ggtcttcctg ctctgtggtt	1980
tgggctgcgg tgagtccac tccacctggg cgctgcct caggagcctg ggctgcgagg	2040
ctccatagga gggctggtgg ctgggaggtc gcgtccgcac acttctggaa gtgagccttt	2100
gagtacgggc tgtccaaagt ttacattttc attttccttt cagggatttg cggggtcagg	2160
gaggggcagg gggcacctgg cagcatatct tctgtgacaa tgtgtccagc aaatcattct	2220
tcaactacat tttagaaagg aggaaatcta aaataaggta agggagggaa gcatggagtt	2280
gtcagttttc tgggctgtga ctgaaagaca cactgagctg tgatgaagaa aaatacatgg	2340
ccgactccag ggtggtgaca tttagagcta gtcttgaaac ctatcatcta cagaggggag	2400
ggcagccaac agccctcttc ccacctgggt aggcagcgcc ctaattggaa ttggaaacag	2460
aaaattcgcc aggccatact gctggagccc attcagataa aactgcccaa atactgagag	2520
gtgtttttcta caccagcta gaggagcaca ctccattttc ccatgtctga cttcgtggtg	2580
tgagccctgg gccctactga ccatggcgca ggacagctgt ccttcagaaa gcacacggtc	2640
aatccacgtg gaccgtctcc ctgcaggaa ctccgcatcc ttgtccctct ctgcattccc	2700

```

agtttccgca ggagccttga' tcaatgggga agcctgggtg aggatgggcc aggtcccaat 2760
tcccaaagct cctggaagag cctgaagaca ttgggaaagg ctgggcctgg ggaggaggca 2820
gccctgggcc cgttgcccac gacctctggtc ctgggtggag caggaatagt tccactgtat 2880
tgtcacagtg tgtttgcaat ttctgaggtt ctagctagta cagattgtat attgatagta 2940
catattgctt tgtttatgtc tttagatga gaaaggctta aaacttgaga atatatattt 3000
ggaatacagc cttagaacgg tttctgtaca catccacgtg cacttcacgg gtgatcagtt 3060
ctagtaccta cttgaaacag tgtctgtctg ctactttatt ttccaattt gatacatacc 3120
ctgatttgat gttttggtat ttgagatgaa ctctgagtat gaagctgtac cataatgcag 3180
ggcgtcagtt ttggtgtgac tggacatact tgcttcaata aaagaatata tcactcccaa 3240
aaaaaaaaaa aaaa 3254

```

```

<210> 139
<211> 428
<212> PRT
<213> Homo sapiens

```

```

<400> 139

```

```

Met Glu His Leu Val Pro Thr Val Asp Tyr Tyr Pro Asp Arg Thr Tyr
1           5           10           15

```

```

Ile Phe Thr Phe Leu Leu Ser Ser Arg Val Phe Met Pro Pro His Asp
          20           25           30

```

```

Leu Leu Ala Arg Val Gly Gln Ile Cys Val Glu Gln Lys Gln Gln Leu
          35           40           45

```

```

Glu Ala Gly Pro Glu Lys Ala Lys Leu Lys Ser Phe Ser Ala Lys Ile
          50           55           60

```

```

Val Gln Leu Leu Lys Glu Trp Thr Glu Ala Phe Pro Tyr Asp Phe Gln
65           70           75           80

```

```

Asp Glu Lys Ala Met Ala Glu Leu Lys Ala Ile Thr His Arg Val Thr
          85           90           95

```

```

Gln Cys Asp Glu Glu Asn Gly Thr Val Lys Lys Ala Ile Ala Gln Met
          100          105          110

```

Thr Gln Ser Leu Leu Leu Ser Leu Ala Ala Arg Ser Gln Leu Gln Glu  
 115 120 125  
 Leu Arg Glu Lys Leu Arg Pro Pro Ala Val Asp Lys Gly Pro Ile Leu  
 130 135 140  
 Lys Thr Lys Pro Pro Ala Ala Gln Lys Asp Ile Leu Gly Val Cys Cys  
 145 150 155 160  
 Asp Pro Leu Val Leu Ala Gln Gln Leu Thr His Ile Glu Leu Asp Arg  
 165 170 175  
 Val Ser Ser Ile Tyr Pro Glu Asp Leu Met Gln Ile Val Ser His Met  
 180 185 190  
 Asp Ser Leu Asp Asn His Arg Cys Arg Gly Asp Leu Thr Lys Thr Tyr  
 195 200 205  
 Ser Leu Glu Ala Tyr Asp Asn Trp Phe Asn Cys Leu Ser Met Leu Val  
 210 215 220  
 Ala Thr Glu Val Cys Arg Val Val Lys Lys Lys His Arg Thr Arg Met  
 225 230 235 240  
 Leu Glu Phe Phe Ile Asp Val Ala Arg Glu Cys Phe Asn Ile Gly Asn  
 245 250 255  
 Phe Asn Ser Met Met Ala Ile Ile Ser Gly Met Asn Leu Ser Pro Val  
 260 265 270  
 Ala Arg Leu Lys Lys Thr Trp Ser Lys Val Lys Thr Ala Lys Phe Asp  
 275 280 285  
 Val Leu Glu His His Met Asp Pro Ser Ser Asn Phe Cys Asn Tyr Arg  
 290 295 300  
 Thr Ala Leu Gln Gly Ala Thr Gln Arg Ser Gln Met Ala Asn Ser Ser  
 305 310 315 320  
 Arg Glu Lys Ile Val Ile Pro Val Phe Asn Leu Phe Val Lys Asp Ile  
 325 330 335

Tyr Phe Leu His Lys Ile His Thr Asn His Leu Pro Asn Gly His Ile  
340 345 350

Asn Phe Lys Lys Phe Trp Glu Ile Ser Arg Gln Ile His Glu Phe Met  
355 360 365

Thr Trp Thr Gln Val Glu Cys Pro Phe Glu Lys Asp Lys Lys Ile Gln  
370 375 380

Ser Tyr Leu Leu Thr Ala Pro Ile Tyr Ser Glu Glu Ala Leu Phe Val  
385 390 395 400

Ala Ser Phe Glu Ser Glu Gly Pro Glu Asn His Val Glu Lys Asp Ser  
405 410 415

Trp Lys Thr Leu Arg Thr Thr Leu Leu Asn Arg Ala  
420 425

<210> 140  
<211> 495  
<212> DNA  
<213> Homo sapiens

<400> 140  
 ttttttgtgg atatgggact ttaatatata gtgagaggaa tataaatcag catgactttt 60  
 tgctgggtgtt atgtaataaa atgtaaaacg tacataccat ttcatgcaga aaatttatat 120  
 ccaagaatct atcccaatga ggtagttaca taaatatgca agtatacaca agatgttcat 180  
 cacaattaga aacaaccaa atgtccacca acatgagact agttcaaaaa gatacgaggt 240  
 attcatacaa gagactttat gcatccactg aaaagaatca tgtaattcat attgggttgac 300  
 tcaaatagaa gctccatcac atattttcaa gacaaaagga attacaaagc agtatgggtg 360  
 acataatccc atttatgtgc aaatcaaata aattccagat ttcaactgtg ttcaattcag 420  
 cccagtgtca cattcacaga aacaaccag caacaaaaag gcattacaga gtaatttcag 480  
 ccttggctct ccatt 495

<210> 141  
<211> 45  
<212> PRT  
<213> Homo sapiens

<400> 141



Met Gln Val Tyr Thr Arg Cys Ser Ser Gln Leu Glu Thr Thr Lys Met  
1 5 10 15

Ser Thr Asn Met Arg Leu Val Gln Lys Asp Thr Arg Tyr Ser Tyr Lys  
20 25 30

Arg Leu Tyr Ala Ser Thr Glu Lys Asn His Val Ile His  
35 40 45

<210> 142  
<211> 470  
<212> DNA  
<213> Homo sapiens

<400> 142  
tattgagatg tttattgaaa ttccaggtgt ggggaacatc aagaataaga gaggccctcc 60  
cgtgaggggc ttaggtctag tagaggaagg agatgcacac aaagctacaa agtcacatga 120  
gaagtgctct aactgaagtg agcacaggaa attggacctt tttgtttgat cctgagatct 180  
ggacagaagg caatcctcct ccttccttca gaggatacaa tggagaccca gagcaatctg 240  
ctcagcacca gtaagctgga agccatgctg ccttccaccc aattctctgt ggggatgctg 300  
tgctggtttc agtccctggg tctgctcct agttcagcct ctcttgcttg cttctcagat 360  
gtgtctggtg gtagaagttg aggaagagaa cgaggaggct gagggcttac aggagcacag 420  
atgtgttgaa cccaacaggg aaggggcact cagtgaggag actgtaggaa 470

<210> 143  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 143

Leu Asp Arg Arg Gln Ser Ser Ser Phe Leu Gln Arg Ile Gln Trp Arg  
1 5 10 15

Pro Arg Ala Ile Cys Ser Ala Pro Val Ser Trp Lys Pro Cys Cys Leu  
20 25 30

Pro Pro Asn Ser Leu Trp Gly Cys Cys Ala Gly Phe Ser Pro Trp Val  
35 40 45

Leu Leu Leu Val Gln Pro Leu Leu Leu Ala Ser Gln Met Cys Leu Val  
50 55 60

Val Glu Val Glu Glu Glu Asn Glu Glu Ala Glu Gly Leu Gln Glu His  
65 70 75 80

Arg Cys Val Glu Pro Asn Arg Glu Gly Ala Leu Ser Glu Glu Thr Val  
85 90 95

Gly

<210> 144  
<211> 449  
<212> DNA  
<213> Homo sapiens

<400> 144  
taattttcct attaatTTTta ttgatataata actgggtcat aaaataacac tggaagtaat 60  
tgaataaatt ttttaaaacg atcttcataat gttattttttc atttgcagcc agaggaaaaa 120  
aacttgtaac tttctgtgga actttccaga caattttaca gatatggacc atttttaaca 180  
gatcttttaa cctatacact ttttaataag ccaaacagga acgggagaac atcattttcag 240  
tgaaacaaac agatggaaac attgtgaatg tcagaaccac agtcaggaat gttcctttttt 300  
tctcatcttc ccttattgtc aggttttatt gttttcttga aatgttatct cagtcttttaa 360  
atgggttctc tctacactga gtgaaaatgt gctggccgat tcgcatcttt gtcaccactc 420  
gggtgtactcg agataaatgt ataaatagg 449

<210> 145  
<211> 30  
<212> PRT  
<213> Homo sapiens

<400> 145

Met Ser Glu Pro Gln Ser Gly Met Phe Leu Phe Ser His Leu Pro Leu  
1 5 10 15

Leu Ser Gly Phe Ile Val Phe Leu Lys Cys Tyr Leu Ser Leu  
20 25 30

<210> 146  
<211> 423  
<212> DNA  
<213> Homo sapiens

<400> 146  
 cactgtccaa acaggggttta ttgacaggcg tttcacggca acgcatagca acccggcgcg 60  
 ctagggggcg ggcctgtggg cgcgccggg gcgcggggag acctgcgggc cgggccaccg 120  
 gagccccttt cccaatcctg gagctgtata cgccaccgg aagggccgcg gaattggaga 180  
 ggtgctgcag aggggtctata cctcttgctg tttcccggt ctgctcatct tccccactg 240  
 cccttaaggc gcctccgtgg gcgctgat taggctctcg gatgttggtg ggaagatcga 300  
 aacgaagggc taagccccc tcgcccgggt cctgccgga agttcagctc ggcgccctcc 360  
 aggatcaaaa attttaaagg ctgcagcccg gtccccagtg gatcgccag ataacaagaa 420  
 act 423

<210> 147  
 <211> 88  
 <212> PRT  
 <213> Homo sapiens

<400> 147

Leu Ser Lys Gln Gly Leu Leu Thr Gly Val Ser Arg Gln Arg Ile Ala  
 1 5 10 15

Thr Pro Ala Ala Arg Gly Arg Ala Cys Gly Arg Gly Arg Gly Ala Gly  
 20 25 30

Arg Pro Ala Gly Arg Ala Thr Gly Ala Pro Phe Pro Ile Leu Glu Leu  
 35 40 45

Tyr Thr Pro Pro Gly Arg Ala Ala Glu Leu Glu Arg Cys Cys Arg Gly  
 50 55 60

Ser Ile Pro Leu Ala Val Ser Arg Leu Cys Ser Ser Ser Pro Thr Ala  
 65 70 75 80

Leu Lys Ala Pro Pro Trp Ala Arg  
 85

<210> 148  
 <211> 661  
 <212> DNA  
 <213> Homo sapiens

<400> 148  
 aaaaagcata ctgaaagcat ttcataaacg atagcactcc gtataaagta tgatcaccaa 60

gagggcagct tattcttgct taggactaag tagaaataac attcattcaa gattaactct 120  
 gtcttcctgt ctctgaagag tggtgggaca gggagagccg ccttttccag ggtttgcaaa 180  
 acaagctaca tggtgggacc accaatggag cccgtctccc tgggctttca gcttcccctc 240  
 tccagtgggt gctgggaggg gctttttctg tgacctgggc tggtgactgg tgctacatag 300  
 tgagaagccc tgcagggcag tctcaccagc ccagggtggc cctgcccagc cctggtcagt 360  
 gaagaggagc ttccagacac acccatcctg atgttggtgcc catcttcctt gaatgcactg 420  
 agggcggaag ggcctagctg gagactgcca tcacgtagtt cttggagggg ctgctccggc 480  
 ccagcagcac ttggttcttg caggtgagga gcccacagga ggcgggccagt ggggcctcct 540  
 cgtacaagac gcagaatgag ccgtcctact caatgcggta ggacacctca taggggtcca 600  
 cccacagggt cagctcgcat ggcagcagct ggtgcagctg aggctggctg agtacgatct 660  
 g 661

<210> 149  
 <211> 38  
 <212> PRT  
 <213> Homo sapiens

<400> 149

Met Leu Cys Pro Ser Ser Leu Asn Ala Leu Arg Ala Glu Gly Pro Ser  
 1 5 10 15

Trp Arg Leu Pro Ser Arg Ser Ser Trp Arg Gly Cys Ser Gly Pro Ala  
 20 25 30

Ala Leu Gly Ser Cys Arg  
 35

<210> 150  
 <211> 502  
 <212> DNA  
 <213> Homo sapiens

<400> 150

gcggccgcct gggcccctgg atgcttgca ggaatctaca cagggttgct aggtacgaca 60  
 agggtgccca gggctgagga gggtgcccat gcggcctcct acaatgcgta tgggaagccg 120  
 gtgaacgccc tccctcaggg ctggccgggt gcgtctgggg ttgtcctagc tccagctgct 180  
 ggaacaaaat accgagcctg gggacttaag caacagaaat gtattttctc acagcctcgg 240

```

agggggaggg gaaggtccgg tgtcccaggg ttgccgggct gggtctgcgg aggcctctcc 300
cgctgctgcc ttctctcagg cggcctctgc gcaggtccgt cccgtgtccc tctgccctaa 360
cctcctcctg caactaggac accagtggga cccggccagg gctcatcctc acggctgctt 420
cacacatact cacctgtctc gtagccctt ctccacacac gctcgcgttg ttggtactga 480
gagtttgat tctaaccatg aa 502

```

```

<210> 151
<211> 119
<212> PRT
<213> Homo sapiens

```

```

<400> 151

```

```

Ala Ala Ala Trp Ala Pro Gly Cys Leu Gln Gly Ile Tyr Thr Gly Leu
1           5           10           15

```

```

Ser Gly Thr Thr Arg Val Pro Arg Ala Glu Glu Gly Ala His Ala Ala
          20           25           30

```

```

Ser Tyr Asn Ala Tyr Gly Lys Pro Val Asn Ala Leu Pro Gln Gly Trp
35           40           45

```

```

Pro Gly Ala Ser Gly Val Val Leu Ala Pro Ala Ala Gly Thr Lys Tyr
50           55           60

```

```

Arg Ala Trp Gly Leu Lys Gln Gln Lys Cys Ile Phe Ser Gln Pro Arg
65           70           75           80

```

```

Arg Gly Arg Gly Arg Ser Gly Val Pro Gly Leu Pro Gly Trp Phe Cys
          85           90           95

```

```

Gly Gly Leu Ser Arg Cys Cys Leu Leu Ser Gly Gly Leu Cys Ala Gly
100           105           110

```

```

Pro Ser Arg Val Pro Leu Pro
115

```

```

<210> 152
<211> 109
<212> PRT
<213> Homo sapiens

```

```

<400> 152

```

Leu Leu Glu Gln Asn Thr Glu Pro Gly Asp Leu Ser Asn Arg Asn Val  
 1 5 10 15

Phe Ser His Ser Leu Gly Gly Gly Gly Glu Gly Pro Val Ser Gln Gly  
 20 25 30

Cys Arg Ala Gly Ser Ala Glu Ala Ser Pro Ala Ala Ala Phe Ser Gln  
 35 40 45

Ala Ala Ser Ala Gln Val Arg Pro Val Ser Leu Cys Pro Asn Leu Leu  
 50 55 60

Leu Gln Leu Gly His Gln Trp Asp Pro Ala Arg Ala His Pro His Gly  
 65 70 75 80

Cys Phe Thr His Thr His Leu Ser Arg Ser Pro Phe Ser Thr His Ala  
 85 90 95

Arg Val Val Gly Thr Glu Ser Leu Asp Ser Asn His Glu  
 100 105

<210> 153  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<400> 153  
 tttttttttt taaaattatt atatatatct tcaaaatttt attttttaatt taaaatataa 60  
 acaggtttat ctacccatca ctcccttgat gtcaggataa gaccttttct ttgcgtgtgg 120  
 gcctgctgat gcaggctgca cagaggacat tgattagcac agcaagaagc attatcaatt 180  
 tcagcttttag tagaatgagg actcaagaca cttgtgaaac aaaatgaagg caaagtccta 240  
 tattttgaca cttttctctc cctcccaaac attcacggtt gctttaccca cacctaattc 300  
 cacagcattt ttttctttaa taacacgtct tttatcaggt ctttcccaag ttttcaactt 360  
 tttttcatag agattactct cttcacactc ataattgttt gatatttggtta atattgaatt 420  
 aaattacatc gttattaagt acaacttgca aaaacaagtt ttggaacaaa tacaactgat 480  
 tttttttttt ttttttgaga tggagtcttg ctctgtcttc aaataaaaaat aaataaataa 540  
 aactctccaa gagcacccat ttgctagaca ctatgggggg actatcctgt ctactggtgc 600  
 cctcttgtgt taaaacagca ggtc 624

<210> 154  
 <211> 90  
 <212> PRT  
 <213> Homo sapiens

<400> 154

Met Lys Ala Lys Ser Tyr Ile Leu Thr Leu Phe Ser Pro Ser Gln Thr  
 1 5 10 15

Phe Thr Val Ala Leu Pro Thr Pro Asn Ser Thr Ala Phe Phe Ser Leu  
 20 25 30

Ile Thr Arg Leu Leu Ser Gly Leu Ser Gln Val Phe Asn Met Lys Ala  
 35 40 45

Lys Ser Tyr Ile Leu Thr Leu Phe Ser Pro Ser Gln Thr Phe Thr Val  
 50 55 60

Ala Leu Pro Thr Pro Asn Ser Thr Ala Phe Phe Ser Leu Ile Thr Arg  
 65 70 75 80

Leu Leu Ser Gly Leu Ser Gln Val Phe Asn  
 85 90

<210> 155  
 <211> 304  
 <212> DNA  
 <213> Homo sapiens

<400> 155

gaaagggttaa aacaaaaaat ccacatcctc tccccaaccc cagcttctgg gcggaaatac 60  
 gggctttcac tttaaccctt gactggctct ggctccaggg cctgagatgc cttcataatc 120  
 tagtaactgg gtcccgggca tcctcgcgaa accgctgggt cactgccttg ctggcagctt 180  
 cgggggatcg ctgggtcccc gacttggttg cagcctggag agactgctgg gtcccggcct 240  
 cctgcacctc caccggagaa ccctgtgtcc cgacctcctg gacttcacc gaacgctggg 300  
 tccc 304

<210> 156  
 <211> 67  
 <212> PRT  
 <213> Homo sapiens

<400> 156

Leu Arg Cys Leu His Asn Leu Val Thr Gly Ser Arg Ala Ser Ser Arg  
 1 5 10 15

Asn Arg Trp Val Thr Ala Leu Leu Ala Ala Ser Gly Asp Arg Trp Val  
 20 25 30

Pro Asp Leu Leu Ala Ala Trp Arg Asp Cys Trp Val Pro Ala Ser Cys  
 35 40 45

Thr Ser Thr Gly Glu Pro Cys Val Pro Thr Ser Trp Thr Ser Thr Glu  
 50 55 60

Arg Trp Val  
 65

<210> 157  
 <211> 262  
 <212> DNA  
 <213> Homo sapiens

<400> 157  
 tctcaaacat atttgatgtt tattactgta tcactttgaa tatttgcgag agcctattta 60  
 cttctagcag aggtttacat tagcaatata aagtaataaa taaataaata aataaataaa 120  
 taaataaatg aagtccgggt ttttcttttc agtgtgggag accccacata aagcaacaat 180  
 gtatcatagc ttgacactg gataaatggg atgttaagag tgcacttcta ttcaataaca 240  
 tgcaaatggt gacataattc ac 262

<210> 158  
 <211> 483  
 <212> DNA  
 <213> Homo sapiens

<400> 158  
 gcggccgcgg ctgggaggat ggtgacacct gcagtgagtg cagctgcaga gagtcagggtg 60  
 ccagcggctc ctcttttgag gagctggacc tggagggtga ggggcccttg gaggaaccac 120  
 ggctggaccc tgagactgag cccctggggg ctaccaagtg gccctgagag ccagtagacc 180  
 tgagaagggc aaggagtaac ccatgaccag cccctcctg cggggcaggg ctgcggaacc 240  
 gagcagactc tccagccatc ttctccttc ttctgggggc gaggggttcc caggggacgt 300  
 aactcccct gctctaggcc tcttgatgaag ccttctcctc actgtccttt aggtccacg 360  
 ggccaaagca gccaaagact gtatcctgca ccagccctgt gggccgacac tcctgtgtat 420



ctctcttcag actgtcactg agcttccaga ccagaataa accaatgact tacttgttca 480  
 aaa 483

<210> 159  
 <211> 54  
 <212> PRT  
 <213> Homo sapiens

<400> 159

Met Val Thr Pro Ala Val Ser Ala Ala Ala Glu Ser Gln Val Pro Ala  
 1 5 10 15

Ala Pro Leu Leu Arg Ser Trp Thr Trp Arg Val Arg Gly Pro Trp Arg  
 20 25 30

Asn His Gly Trp Thr Leu Arg Leu Ser Pro Trp Gly Leu Pro Ser Gly  
 35 40 45

Pro Glu Ser Pro Val Pro  
 50

<210> 160  
 <211> 576  
 <212> DNA  
 <213> Homo sapiens

<400> 160  
 ttgggttttaa agttctctta ggtataactt acataaacgt taataaatct tagggtacac 60  
 cttggtgaat tttgtatatg tctataccca ccacggtctc catcaaaata ttttatcgtc 120  
 ccagaaatth cccttgggcc ccacctcatc ctcaaagggt atcactattc tgatgtctat 180  
 caccatagat ttgtttttcc tgttcatgta aatggaacca taaacagccc tcttgtgtct 240  
 gttttcttca cttaatatag tgtcattgag atttatctat gttgtattat cagtagttta 300  
 tgcttttttaa ttgctgggta tagtccatag tctgaatata ccacaattta aaaattctat 360  
 tctgtttaca aacatttgag ttctgtcctc cagggttcac catgttatca caaatgacag 420  
 aatttccttc ctcatcaagg ctgaatagta ttccattgtg tagatatacc acattttctt 480  
 tatccattca tccaccgatg gacagttagg ttgattccat atcttggcta ttgtgaataa 540  
 tcctgcatgt tttattgtta tgaataaagc tgctgt 576

<210> 161

<211> 30  
 <212> PRT  
 <213> Homo sapiens

<400> 161

Met Leu Ser Gln Met Thr Glu Phe Pro Ser Ser Ser Arg Leu Asn Ser  
 1 5 10 15

Ile Pro Leu Cys Arg Tyr Thr Thr Phe Ser Leu Ser Ile His  
 20 25 30

<210> 162  
 <211> 500  
 <212> DNA  
 <213> Homo sapiens

<400> 162  
 ccagccaagc cggccatcat cagggccaac agaagcagaa gcgccaccgg acgcgcttca 60  
 cccccgcaca gctcaacgag ttggagagga gcttcgccaa gactcactac cccgacatct 120  
 ttatgcgtga ggagctggca ctgcgtatcg ggctgaccga gtcccagtg caggctgcct 180  
 gtgcgttcct gtatcgagtt atctccttct ctaccggaa actgggtccc atcgccatcc 240  
 cccaatggac acgcaaggcc cgtctccggc cagtatagcg acatcccga agaagctcct 300  
 caaaatcgaa gcccggcggtt gtcgggctac agggttcgcc tcctccgcct gagaaggcaa 360  
 cctcagcgcc cccccgggcg gccagccga gcgcacacct caactcctgc tcgcattatt 420  
 gacaaatatt accccctaata gagtttgtgt taagcgtttg gataaaagga ggaatgcaac 480  
 aattatacag aaaacaagag 500

<210> 163  
 <211> 51  
 <212> PRT  
 <213> Homo sapiens

<400> 163

Pro Ala Lys Pro Ala Ile Ile Arg Ala Asn Arg Ser Arg Ser Ala Thr  
 1 5 10 15

Gly Arg Ala Ser Pro Pro His Ser Ser Thr Ser Trp Arg Gly Ala Ser  
 20 25 30

Pro Arg Leu Thr Thr Pro Thr Ser Leu Cys Val Arg Ser Trp His Cys  
 35 40 45

Val Ser Gly  
50

<210> 164  
<211> 869  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (869)..(869)  
<223> n = unknown

```

<400> 164
agcggggcctt gcaaagcggg agggagacga tcggggccgct ggccgctgtc tcggcggttca      60
gcaatagagg ccttcccgga tctcccgaga ggcggggagc gagcctgggt ccagcagcct      120
tctccctccc gagaacagca gaaagggggg actcgacaga atgacctctg tttccccaag      180
gaagtgcact ctgacgataa cctcgggagg gacgagaagg gccgctcttt cggagagcgg      240
ccgccgcccc tggagtaggg gactcagtgg ccacgaaggc cttccctgct cgcgaccttt      300
ccacgggaag gcacgaagct tccgatgggg gccccggggc gtcctgact tttctacggc      360
gcgagggctc tgactctgcg gttcaggttt gaaagtcctt tggaagctcg caagtgggtg      420
tctcccacca cctgctcggg catagcagga agaaggcgca gtgagggcgg gagtctggat      480
gagcggagag tagccaccgc ggagaagagt gcgggcttgc aggagccaac gaagataact      540
cgaaatgtgg gcaggcaggt gtcgggtggg cttgcaaaag tgggaaagca cgagaaaaga      600
acaatgttcc gcgtccgctt agaatacggg aacaagtgag ctttaaagga acaataactca      660
ttctcattac ccctgtccag gaagaaagag tgcttgatct tgcttgcttc ccagggtccgc      720
tgggcttgga gagccagaaa gagggctact tggatcccca gccaacgcca gtggtctgtc      780
ccccagcga agcacttctg gccttggtgt gatccccatt ctttttctca aatacaaaat      840
cttatgagtc ctcggacagg aattacatn                                         869

```

<210> 165  
<211> 85  
<212> PRT  
<213> Homo sapiens

<400> 165

Ser Gly Ala Cys Lys Ala Val Gly Arg Arg Ser Gly Arg Trp Pro Leu

```

<210> 166
<211> 496
<212> DNA
<213> Homo sapiens

<400> 166
cctttgccag ccttctgcat ttcctagaac cagctgaatt tgccaaaaga agtattaaag 60
gaaaaaacaca ctaactttgc aaattaagaa ctgggtctttg ctttctttat gttttgaaac 120
tcaaaacaga caaatTTTTCT atttttagta gactaaaaag agtaccctag aaatgacctt 180
tactttcaat acctgaacga accaagcgta gtgatcctag gaggctgtta tcagcccaca 240
tttaactgaa attttcttga tactcctaag tcttagataa ctctttcaat attgtatcac 300
taattcctaa catacaatca atgaataatc tgcagaatgg catgtgtgag tgtataacac 360
tgaataaaatt catctaaaat atacatattt ataacttagt agttacactt tctagaaatt 420
tccccttggt ttgaaaagaa tagcagtagc aacagaggca aactggccta tgactgatgt 480
tctaggagag aacaga 496

```

Phe Ala Ser Leu Leu His Phe Leu Glu Pro Ala Glu Phe Ala Lys Arg

1 5 10 15

Ser Ile Lys Gly Lys Thr His  
20

<210> 168  
<211> 484  
<212> DNA  
<213> Homo sapiens

<400> 168  
ttaaacccttc taaatttctc aaggacactt tattcaagga ccacagagtt tacactaact 60  
accagaagc caggaatagc ttaaggagag actcaccacc agcagcttct tttcaatcaa 120  
gtttcacttc aacctcacac ccaggaaccc attcaaattc ctacatttcg gtatccttag 180  
tcgaactaac ttcctgtgcc ggaagctttt gtctgtctca gtgacttctt tctttaacaa 240  
attcccttca tctccccctt gagtcaaagc ccatgggggc cccaggaggc atgcaatatt 300  
taccaagggc tcttccccgt tttcctgcct ctgtctggca gttgtttgcc tttactttta 360  
ggtttgtagt cacagcctgt tttttcttcc ttggacacac cagcttttct gaatggtagg 420  
attatttaca gtagaattaa ccttgtcctt caccocgaga actgagcttg aaattcacta 480  
atca 484

<210> 169  
<211> 48  
<212> PRT  
<213> Homo sapiens

<400> 169

Met Gly Ser Pro Gly Gly Met Gln Tyr Leu Pro Arg Ala Leu Pro Arg  
1 5 10 15

Phe Pro Ala Ser Val Trp Gln Leu Phe Ala Phe Thr Phe Arg Phe Val  
20 25 30

Val Thr Ala Cys Phe Phe Phe Leu Gly His Thr Ser Phe Ser Glu Trp  
35 40 45

<210> 170  
<211> 3941  
<212> DNA  
<213> Homo sapiens

<400> 170  
 accatctact ccacagtcag ctcatccaca actgccatca cctcaccttt cactaccgca 60  
 gagactgggg tgacttccac accttcatcc ccatcttctc tgagtacaga catcccgacc 120  
 acatccctaa gaactctcac ccattatct ttgagcacca gcacttcatt gactacaacc 180  
 acagaccttc cctctatacc cactgatatc agtagcttac caacccaat acacatcatt 240  
 tcatcttctc cctccatcca aagtacagaa acctcatccc ttgtgggcac cacctctccc 300  
 accatgtcca ctgtgagagc gacctcaga agtactgaga acacccaat cagttccctt 360  
 agcacaagta ttgttggttac acctgaaacc ccaacaacac aggccctcc tgtactgatg 420  
 tctgccactg ggacccaaac atcccctgta cctactactg tcacctttgg aagtatggat 480  
 tcctctacgt ccactcttca tactcttact ccatcaacag ccttgagcaa gatcatgtca 540  
 acatcacagt ttctatttcc tagcacacat tcctccaccc ttcaaacaac tccttcaatc 600  
 ccctctttgc aaacttcact cacatctaca agtgagttca ctacagaatc tttcactagg 660  
 ggaagtacgt ctacaaatgc aatcttgact tcttttagta ccatcatctg gtcctcaaca 720  
 ccactatta tcatgtctc ttctccatct tctgccagca taactccagt gttcgctact 780  
 accattcatt ctgttccttc gtcaccatac attttcagta cagaaaatgt gggctccgct 840  
 tctatcacag ctttctctag tctctcttcc tcttcaacta ccagcacttc tccaaccagc 900  
 tcctctctga ccacagctct cactgaaata accccctttt cttatatattc ctttccctcc 960  
 accacaccct gtccaggaac tataacaatt accatagtcc ctgcctcccc cactgatcca 1020  
 tgtgttgaaa tggatcccag cactgaagct acttctctc ccaccactcc attaacagtc 1080  
 tttcccttta ctactgaaat ggtcacctgt cctagctcca tcagtatgca aactactctt 1140  
 gctacacata tggacacttc ttccatgacg ccagaaagtg agtccagcat catacctaatt 1200  
 gcttccagtt ccactggcac tgggactgta cccacaaaca cagttttcac aagtactcga 1260  
 ctgcccacca gtgagacctg gctgagcaac aactctgtga tccccacacc tcttcttggc 1320  
 gtctctacca tcccgctcac catgaaacca agcagtagcc tcccgaccat cctgaggact 1380  
 tcaagcaagt caacacaccc atccccaccc accgccagga cttcagagac atcagtggcc 1440  
 actaccaga ctctaccac cttacaacg cgcaggacaa ctccatcac ttcttggatg 1500  
 accacacagt ccacgttgac caccactgca ggcacctgtg acaatggtgg cacctgggaa 1560  
 cagggccagt gtgcttgct tccggggtt tctggggacc gctgtcagct ccagaccaga 1620  
 tgccagaacg ggggccagt ggatggcctc aagtgccagt gcccagcac cttctatggt 1680

tccagttgtg agtttgctgt ggaacagggtg gatctagatg tagtggagac cgaggtgggc	1740
atggaagtgt ctgtggatca gcagttctcg ccggacctca atgacaacac ttcccaggcc	1800
tacagggatt tcaacaagac cttctggaat cagatgcaga agatttttgc agacatgcag	1860
ggcttcacct tcaagggtgt ggagatcctg tccctgagga atggcagcat cgtggtggac	1920
tacctggtcc tgctggagat gcccttcagc ccccagctgg agagcgagta tgagcaggtg	1980
aagaccacgc tgaaggaggg gctccagaac gccagccagg atgcgaacag ctgccaggac	2040
tcccagaccc tgtgttttaa gcctgactcc atcaagggtga acaacaacag caagacagag	2100
ctgaccccg aagccatctg ccgccgcgcc gctcccacgg gctatgaaga gttctacttc	2160
cctctggtgg aggccacccg gctccgctgt gtcaccaa at gcacgtcggg cgtggacaac	2220
gccatcgact gtcaccaggg ccagtgcgtt ctagagacga gcggtcccgc gtgtcgtgc	2280
tactccaccg acacgcactg gttctctggc ccgcgctgcg aggtggccgt cactggagg	2340
gcgctggtcg ggggcctgac ggccggcgcc gcgctgctgg tgctgctgct gctggcgctg	2400
ggcgtccggg cggtgcgctc cggatggtgg ggccggccagc gccgaggccg gtcctgggac	2460
caggacagga aatggttcga gacctgggat gaggaagtcg tgggcacttt ttcaaactgg	2520
ggtttcgagg acgacggaac agacaaggat acaaatttcc atgtggcctt ggagaacgtg	2580
gacaccacta tgaaggtgca catcaagaga cccgagatga cctcgtcctc agtgtgagcc	2640
ctgccccggc ccttcaccac cccctccgcc ctgccccgga cacaagggtc tgcattgcgt	2700
ccatttcaag aggtggcccc aggacgcggg cagcccaggc tcctgctggt cttgggcaag	2760
atgagactgt tccccaaat cccatccttc tccttccaac ttggtgaaa cccacctgga	2820
gacgcagttc acgtccaggc tcttccactg tggaatcttg ggcaagtcag taacgagcct	2880
cagtttcttc acctgcaaaa cgggtacagc attcctgtat gatagctcac gccgttggtg	2940
tgaaaaccac atagacttgg tcaattctcg gtcctactct gccctccgt ctcagccctc	3000
gtgttgccat tgctctctc ggatcctcca atcctcacgt ccttcacctg gtctctggcc	3060
ctggttctta ttttctctca attccctact gcctgtttct tactttgaac ctggaggcag	3120
cctgcagccc catcccatct cctgccctct cctgatctaa ctccctgctg catctcttgc	3180
tctcattcct tagacgtcct ccccttttga ccccgttcct tcatccatcc tgcacccag	3240
tccccagcc ctaaatectc cctcctctcc tcacatcctg gtccctagca aggtatagat	3300
agcctctgtg tcttaggata ccccggtgct tgttccctcg gtcaccctgt tgcccagttc	3360

```

cccgtttctc ttgctctcat tccttgatc ttctccctt ctgagcccg ccattcatcg 3420
gttctgcccc cgactcccc agccctaaat accccagctc ctaattcccc cctcaccocg 3480
ttgtcgaatt cccggtttct cttgctctca ttcttgat ctctccct tctgagcctg 3540
tccattcatc ggtggttctg cccctactcc ccagcccta aataccccag ctgctgttcc 3600
tccccatcac ccagccaccg gattctccat tcacccttt ctctcaccoc tggagccccg 3660
tgggtggggg cagggcacga gttccccagt cccaaggaa aggcagcccc ctgagctcc 3720
ctctcctca ttcccttcca tctccctccc ctctgccttt taaaccatc cctccgatt 3780
ccctcctcc cccctctctc cctggtgtca actcgattcc tgcggtaact ctgagccctg 3840
aaatcctcag tctccttggc ggggaagatt ggctttgggg acaggaagtc ggcacatctc 3900
caggtctcca tgtgcacaat atagagttta ttgtaaaaag c 3941

```

```

<210> 171
<211> 878
<212> PRT
<213> Homo sapiens

```

```

<400> 171

```

```

Thr Ile Tyr Ser Thr Val Ser Ser Ser Thr Thr Ala Ile Thr Ser Pro
1           5           10           15

```

```

Phe Thr Thr Ala Glu Thr Gly Val Thr Ser Thr Pro Ser Ser Pro Ser
          20           25           30

```

```

Ser Leu Ser Thr Asp Ile Pro Thr Thr Ser Leu Arg Thr Leu Thr Pro
          35           40           45

```

```

Leu Ser Leu Ser Thr Ser Thr Ser Leu Thr Thr Thr Thr Asp Leu Pro
          50           55           60

```

```

Ser Ile Pro Thr Asp Ile Ser Ser Leu Pro Thr Pro Ile His Ile Ile
65           70           75           80

```

```

Ser Ser Ser Pro Ser Ile Gln Ser Thr Glu Thr Ser Ser Leu Val Gly
          85           90           95

```

```

Thr Thr Ser Pro Thr Met Ser Thr Val Arg Ala Thr Leu Arg Ser Thr
          100          105          110

```



Glu Asn Thr Pro Ile Ser Ser Phe Ser Thr Ser Ile Val Val Thr Pro  
 115 120 125

Glu Thr Pro Thr Thr Gln Ala Pro Pro Val Leu Met Ser Ala Thr Gly  
 130 135 140

Thr Gln Thr Ser Pro Val Pro Thr Thr Val Thr Phe Gly Ser Met Asp  
 145 150 155 160

Ser Ser Thr Ser Thr Leu His Thr Leu Thr Pro Ser Thr Ala Leu Ser  
 165 170 175

Lys Ile Met Ser Thr Ser Gln Phe Pro Ile Pro Ser Thr His Ser Ser  
 180 185 190

Thr Leu Gln Thr Thr Pro Ser Ile Pro Ser Leu Gln Thr Ser Leu Thr  
 195 200 205

Ser Thr Ser Glu Phe Thr Thr Glu Ser Phe Thr Arg Gly Ser Thr Ser  
 210 215 220

Thr Asn Ala Ile Leu Thr Ser Phe Ser Thr Ile Ile Trp Ser Ser Thr  
 225 230 235 240

Pro Thr Ile Ile Met Ser Ser Ser Pro Ser Ser Ala Ser Ile Thr Pro  
 245 250 255

Val Phe Ala Thr Thr Ile His Ser Val Pro Ser Ser Pro Tyr Ile Phe  
 260 265 270

Ser Thr Glu Asn Val Gly Ser Ala Ser Ile Thr Ala Phe Pro Ser Leu  
 275 280 285

Ser Ser Ser Ser Thr Thr Ser Thr Ser Pro Thr Ser Ser Ser Leu Thr  
 290 295 300

Thr Ala Leu Thr Glu Ile Thr Pro Phe Ser Tyr Ile Ser Leu Pro Ser  
 305 310 315 320

Thr Thr Pro Cys Pro Gly Thr Ile Thr Ile Thr Ile Val Pro Ala Ser  
 325 330 335

Pro Thr Asp Pro Cys Val Glu Met Asp Pro Ser Thr Glu Ala Thr Ser  
 340 345 350  
 Pro Pro Thr Thr Pro Leu Thr Val Phe Pro Phe Thr Thr Glu Met Val  
 355 360 365  
 Thr Cys Pro Ser Ser Ile Ser Met Gln Thr Thr Leu Ala Thr His Met  
 370 375 380  
 Asp Thr Ser Ser Met Thr Pro Glu Ser Glu Ser Ser Ile Ile Pro Asn  
 385 390 395 400  
 Ala Ser Ser Ser Thr Gly Thr Gly Thr Val Pro Thr Asn Thr Val Phe  
 405 410 415  
 Thr Ser Thr Arg Leu Pro Thr Ser Glu Thr Trp Leu Ser Asn Asn Ser  
 420 425 430  
 Val Ile Pro Thr Pro Leu Pro Gly Val Ser Thr Ile Pro Leu Thr Met  
 435 440 445  
 Lys Pro Ser Ser Ser Leu Pro Thr Ile Leu Arg Thr Ser Ser Lys Ser  
 450 455 460  
 Thr His Pro Ser Pro Pro Thr Ala Arg Thr Ser Glu Thr Ser Val Ala  
 465 470 475 480  
 Thr Thr Gln Thr Pro Thr Thr Leu Thr Thr Arg Arg Thr Thr Pro Ile  
 485 490 495  
 Thr Ser Trp Met Thr Thr Gln Ser Thr Leu Thr Thr Thr Ala Gly Thr  
 500 505 510  
 Cys Asp Asn Gly Gly Thr Trp Glu Gln Gly Gln Cys Ala Cys Leu Pro  
 515 520 525  
 Gly Phe Ser Gly Asp Arg Cys Gln Leu Gln Thr Arg Cys Gln Asn Gly  
 530 535 540  
 Gly Gln Trp Asp Gly Leu Lys Cys Gln Cys Pro Ser Thr Phe Tyr Gly  
 545 550 555 560

Ser Ser Cys Glu Phe Ala Val Glu Gln Val Asp Leu Asp Val Val Glu  
 565 570 575

Thr Glu Val Gly Met Glu Val Ser Val Asp Gln Gln Phe Ser Pro Asp  
 580 585 590

Leu Asn Asp Asn Thr Ser Gln Ala Tyr Arg Asp Phe Asn Lys Thr Phe  
 595 600 605

Trp Asn Gln Met Gln Lys Ile Phe Ala Asp Met Gln Gly Phe Thr Phe  
 610 615 620

Lys Gly Val Glu Ile Leu Ser Leu Arg Asn Gly Ser Ile Val Val Asp  
 625 630 635 640

Tyr Leu Val Leu Leu Glu Met Pro Phe Ser Pro Gln Leu Glu Ser Glu  
 645 650 655

Tyr Glu Gln Val Lys Thr Thr Leu Lys Glu Gly Leu Gln Asn Ala Ser  
 660 665 670

Gln Asp Ala Asn Ser Cys Gln Asp Ser Gln Thr Leu Cys Phe Lys Pro  
 675 680 685

Asp Ser Ile Lys Val Asn Asn Asn Ser Lys Thr Glu Leu Thr Pro Glu  
 690 695 700

Ala Ile Cys Arg Arg Ala Ala Pro Thr Gly Tyr Glu Glu Phe Tyr Phe  
 705 710 715 720

Pro Leu Val Glu Ala Thr Arg Leu Arg Cys Val Thr Lys Cys Thr Ser  
 725 730 735

Gly Val Asp Asn Ala Ile Asp Cys His Gln Gly Gln Cys Val Leu Glu  
 740 745 750

Thr Ser Gly Pro Ala Cys Arg Cys Tyr Ser Thr Asp Thr His Trp Phe  
 755 760 765

Ser Gly Pro Arg Cys Glu Val Ala Val His Trp Arg Ala Leu Val Gly  
 770 775 780

Gly Leu Thr Ala Gly Ala Ala Leu Leu Val Leu Leu Leu Leu Ala Leu  
785 790 795 800

Gly Val Arg Ala Val Arg Ser Gly Trp Trp Gly Gly Gln Arg Arg Gly  
805 810 815

Arg Ser Trp Asp Gln Asp Arg Lys Trp Phe Glu Thr Trp Asp Glu Glu  
820 825 830

Val Val Gly Thr Phe Ser Asn Trp Gly Phe Glu Asp Asp Gly Thr Asp  
835 840 845

Lys Asp Thr Asn Phe His Val Ala Leu Glu Asn Val Asp Thr Thr Met  
850 855 860

Lys Val His Ile Lys Arg Pro Glu Met Thr Ser Ser Ser Val  
865 870 875

<210> 172  
<211> 538  
<212> DNA  
<213> Homo sapiens

<400> 172  
tttttttttt ttttgttttt tttttaaaag gtactcaaat gtcaacttta ttgtttctat 60  
ataaacactt ttgtactgaa aactgtaaaa ataacaaagt ttgctgtgat tgcaatccaa 120  
atthtttgaaa gccagaaaat ctaattatgc tatagcccaa ctacctaag ctttctttat 180  
ccataagtaa ctttgcttca atttcttgat gttgggtttc atctcactga ctttgggctt 240  
ctaagacaca tgggaatact tatatcatct tggcttcttt ggggtcaaattc aaacagtaga 300  
gctaaagtta ttcaaataca ttcagattac acagatccct tatgaattac tagtatcata 360  
gtaggaagaa aaagatacaa gaaaaataca tcctagaact cattatcaaa attattggtg 420  
tatagtctat actagcatag agtagctttc tcaacctgct atataaaatt actagcaaga 480  
aaaaaagggtg caagaataag atttatggct gaagtggctt ggtgtcttga ttccctat 538

<210> 173  
<211> 31  
<212> PRT  
<213> Homo sapiens

<400> 173

Met Gly Ile Leu Ile Ser Ser Trp Leu Leu Trp Val Lys Ser Asn Ser  
 1 5 10 15

Arg Ala Lys Val Ile Gln Ile His Ser Asp Tyr Thr Asp Pro Leu  
 20 25 30

<210> 174  
 <211> 2609  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (2025)..(2025)  
 <223> n = unknown

<220>  
 <221> misc\_feature  
 <222> (2036)..(2036)  
 <223> n = unknown

<220>  
 <221> misc\_feature  
 <222> (2164)..(2164)  
 <223> n = unknown

<220>  
 <221> misc\_feature  
 <222> (2264)..(2264)  
 <223> n = unknown

<400> 174  
 gctgatagca cagttctgtc cagagaagga aggcggaata aacttattca ttcccaggaa 60  
 ctcttgggggt aggtgtgtgt ttttcacatc ttaaaggctc acagaccctg cgctggacaa 120  
 atgttccatt cctgaaggac ctctccagaa tccggattgc tgaatcttcc ctgttgccta 180  
 gaagggctcc aaaccacctc ttgacaatgg gaaactgggt ggtaaccac tggttttcag 240  
 ttttgtttct ggttgtttgg ttagggctga atgttttctt gtttgtggat gccttcctga 300  
 aatatgagaa ggccgacaaa tactactaca caagaaaaat ccttgggtca acattggcct 360  
 gtgcccagac gtctgctctc tgcttgaatt ttaacagcac gctgatcctg cttcctgtgt 420  
 gtcgcaatct gctgtccttc ctgaggggca cctgctcatt ttgcagccgc aactgagaa 480  
 agcaattgga tcacaacctc accttcaca agctggtggc ctatatgatc tgcctacata 540

cagctattca catcattgca cacctgttta actttgactg ctatagcaga agccgacagg	600
ccacagatgg ctcccttgcc tccattctct ccagcctatc tcatgatgag aaaaaggggg	660
gttcttggtt aaatcccatc cagtcccgaa acacgacagt ggagtatgtg acattcacca	720
gcgttgctgg tctcactgga gtgatcatga caatagcctt gattctcatg gtaacttcag	780
ctactgagtt catccggagg agttattttg aagtcttctg gtatactcac caccttttta	840
tcttctatat ccttggctta gggattcacg gcattgggtg aattgtccgg ggtcaaacag	900
aggagagcat gaatgagagt catcctcgca agtgtgcaga gtcttttgag atgtgggatg	960
atcgtgactc ccaactgtagg cggcctaagt ttgaagggca tccccctgag tcttggaggt	1020
ggatccttgc accggtcatt ctttatatct gtgaaaggat cctccggttt taccgctccc	1080
agcagaaggt tgtgattacc aagggtgtta tgcacccatc caaagttttg gaattgcaga	1140
tgaacaagcg tggcttcagc atggaagtgg ggcagtatat ctttgttaat tgccctcaa	1200
tctctctcct ggaatggcat ccttttactt tgacctctgc tccagaggaa gatttcttct	1260
ccattcatat ccgagcagca ggggactgga cagaaaatct cataaggggt ttcgaacaac	1320
aatttcacc aattcccagg attgaagtgg atgggtccctt tggcacagcc agtgaggatg	1380
ttttccagta tgaagtggct gtgctggtt gagcaggaat tggggtcacc ccctttgctt	1440
ctatcttgaa atccatctgg tacaattcc agtgtgcaga ccacaacctc aaaacaaaaa	1500
agatctatct ctactggatc tgcagggaga cagggtgcctt ttcttggttc aacaacctgt	1560
tgacttccct ggaacaggag atggaggaat taggcaaagt gggttttcta aactaccgtc	1620
tcttctcac cggatgggac agcaatattg ttggatcatg agcattaaac tttgacaagg	1680
ccaactgacat cgtgacaggt ctgaaacaga aaacctcctt tgggagacca atgtgggaca	1740
atgagttttc tacaatagct acctccacc ccaagtctgt agtgggagtt ttcttatgtg	1800
gccctcgac tttggcaaag agcctgcgca aatgctgtca ccgatattcc agtctggatc	1860
ctagaaaggt tcaattctac ttcaacaaag aaaatttttg agttatagga ataaggacgg	1920
taatctgcat tttgtctctt tgtatcttca gtaattgagt tataggaata aggacggtaa	1980
tctgcatttt gtctctttgt atcttcagta atttacttgg tctcntcagg tttgancagt	2040
cacttttagga taagaatgtg cctctcaagc cttgactccc tggatattctt tttttgattg	2100
cattcaactt cgttacttga gcttcagcaa cttagaact tctgaagttc ttaaagttct	2160
gaantttcta aagcccatgg atcctttctc agaaaaataa ctgtaaatct ttctggacag	2220

```

ccatgactgt agcaaggctt gatagcagaa gtttggtggt tcanaattat acaactaatc 2280
ccaggtgatt ttatcaattc cagtgttacc atctcctgag ttttggtttg taatcttttg 2340
tccctccac cccacagaa gattttaagt agggtgactt tttaaataaa aattttattga 2400
ataattaatg ataaaacata ataataaaca taaataataa aaaaattac cgagaacccc 2460
atccccatat aacaccaaca gtgtacatgt ttactgtcac ttttgatatg gtttatccag 2520
tgtgaacagc aattttattat ttttgctcat caaaaaataa aggatttttt ttcaattgaa 2580
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2609

```

```

<210> 175
<211> 658
<212> DNA
<213> Homo sapiens

```

```

<400> 175
ggacctctcc agaatccgga ttgctgaatc ttccctggtg cctagaaggg ctccaaacca 60
cctcttgaca atgggaaact ggggtggtta ccactggttt tcagttttgt ttctggttgt 120
ttggttaggg ctgaatgttt tcctggttgt ggatgccttc ctgaaatatg agaaggccga 180
caaatactac tacacaagaa aaatccttgg gtcaacattg gcctgtgccc gagcgtctgc 240
tctctgcttg aattttaaca gcacgtgat cctgcttctt gtgtgtcgca atctgctgtc 300
cttctgagg ggcacctgct ctttttgag cgcacactg agaaagcaat tggatcacia 360
cctcaccttc cacaagctgg tggcctatat gatctgccta catacagcta ttcacatcat 420
tgcacacctg ttttaacttg actgctatag cagaagccga caggccacag atggctccct 480
tgcctccatt ctctccagcc tatctcatga tgagaaaaag gggggttctt ggctaaatcc 540
catccatccc catataacac caacagtgt catgtttact gtcacttttg atatggtctt 600
atccagtgtg aacagcaatt tattattttt gctcatcaaa aaataaagga ttttcttc 658

```

```

<210> 176
<211> 564
<212> PRT
<213> Homo sapiens

```

```

<400> 176

```

```

Met Gly Asn Trp Val Val Asn His Trp Phe Ser Val Leu Phe Leu Val
1           5           10           15

```

```

Val Trp Leu Gly Leu Asn Val Phe Leu Phe Val Asp Ala Phe Leu Lys

```

	20		25		30														
Tyr	Glu	Lys	Ala	Asp	Lys	Tyr	Tyr	Tyr	Thr	Arg	Lys	Ile	Leu	Gly	Ser				
		35					40					45							
Thr	Leu	Ala	Cys	Ala	Arg	Ala	Ser	Ala	Leu	Cys	Leu	Asn	Phe	Asn	Ser				
	50					55					60								
Thr	Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Leu	Leu	Ser	Phe	Leu	Arg				
65					70					75					80				
Gly	Thr	Cys	Ser	Phe	Cys	Ser	Arg	Thr	Leu	Arg	Lys	Gln	Leu	Asp	His				
				85					90					95					
Asn	Leu	Thr	Phe	His	Lys	Leu	Val	Ala	Tyr	Met	Ile	Cys	Leu	His	Thr				
			100					105					110						
Ala	Ile	His	Ile	Ile	Ala	His	Leu	Phe	Asn	Phe	Asp	Cys	Tyr	Ser	Arg				
		115					120					125							
Ser	Arg	Gln	Ala	Thr	Asp	Gly	Ser	Leu	Ala	Ser	Ile	Leu	Ser	Ser	Leu				
	130					135					140								
Ser	His	Asp	Glu	Lys	Lys	Gly	Gly	Ser	Trp	Leu	Asn	Pro	Ile	Gln	Ser				
145					150					155					160				
Arg	Asn	Thr	Thr	Val	Glu	Tyr	Val	Thr	Phe	Thr	Ser	Val	Ala	Gly	Leu				
				165					170					175					
Thr	Gly	Val	Ile	Met	Thr	Ile	Ala	Leu	Ile	Leu	Met	Val	Thr	Ser	Ala				
			180					185					190						
Thr	Glu	Phe	Ile	Arg	Arg	Ser	Tyr	Phe	Glu	Val	Phe	Trp	Tyr	Thr	His				
		195					200					205							
His	Leu	Phe	Ile	Phe	Tyr	Ile	Leu	Gly	Leu	Gly	Ile	His	Gly	Ile	Gly				
	210					215					220								
Gly	Ile	Val	Arg	Gly	Gln	Thr	Glu	Glu	Ser	Met	Asn	Glu	Ser	His	Pro				
225					230					235					240				
Arg	Lys	Cys	Ala	Glu	Ser	Phe	Glu	Met	Trp	Asp	Asp	Arg	Asp	Ser	His				



245										250				255			
Cys	Arg	Arg	Pro 260	Lys	Phe	Glu	Gly	His 265	Pro	Pro	Glu	Ser	Trp 270	Lys	Trp		
Ile	Leu	Ala 275	Pro	Val	Ile	Leu	Tyr 280	Ile	Cys	Glu	Arg	Ile 285	Leu	Arg	Phe		
Tyr	Arg 290	Ser	Gln	Gln	Lys	Val 295	Val	Ile	Thr	Lys	Val 300	Val	Met	His	Pro		
Ser 305	Lys	Val	Leu	Glu	Leu 310	Gln	Met	Asn	Lys	Arg 315	Gly	Phe	Ser	Met	Glu 320		
Val	Gly	Gln	Tyr	Ile 325	Phe	Val	Asn	Cys	Pro 330	Ser	Ile	Ser	Leu	Leu 335	Glu		
Trp	His	Pro	Phe 340	Thr	Leu	Thr	Ser	Ala 345	Pro	Glu	Glu	Asp	Phe 350	Phe	Ser		
Ile	His	Ile 355	Arg	Ala	Ala	Gly	Asp 360	Trp	Thr	Glu	Asn 365	Leu	Ile	Arg	Ala		
Phe	Glu 370	Gln	Gln	Tyr	Ser	Pro 375	Ile	Pro	Arg	Ile	Glu 380	Val	Asp	Gly	Pro		
Phe 385	Gly	Thr	Ala	Ser	Glu 390	Asp	Val	Phe	Gln	Tyr 395	Glu	Val	Ala	Val	Leu 400		
Val	Gly	Ala	Gly	Ile 405	Gly	Val	Thr	Pro	Phe 410	Ala	Ser	Ile	Leu	Lys 415	Ser		
Ile	Trp	Tyr	Lys 420	Phe	Gln	Cys	Ala	Asp 425	His	Asn	Leu	Lys	Thr 430	Lys	Lys		
Ile	Tyr	Phe 435	Tyr	Trp	Ile	Cys	Arg 440	Glu	Thr	Gly	Ala	Phe 445	Ser	Trp	Phe		
Asn	Asn 450	Leu	Leu	Thr	Ser	Leu 455	Glu	Gln	Glu	Met	Glu 460	Glu	Leu	Gly	Lys		
Val	Gly	Phe	Leu	Asn	Tyr	Arg	Leu	Phe	Leu	Thr	Gly	Trp	Asp	Ser	Asn		

465                      470                      475                      480

Ile Val Gly His Ala Ala Leu Asn Phe Asp Lys Ala Thr Asp Ile Val  
485 490 495

Thr Gly Leu Lys Gln Lys Thr Ser Phe Gly Arg Pro Met Trp Asp Asn  
500 505 510

Glu Phe Ser Thr Ile Ala Thr Ser His Pro Lys Ser Val Val Gly Val  
515 520 525

Phe Leu Cys Gly Pro Arg Thr Leu Ala Lys Ser Leu Arg Lys Cys Cys  
530 535 540

His Arg Tyr Ser Ser Leu Asp Pro Arg Lys Val Gln Phe Tyr Phe Asn  
545 550 555 560

Lys Glu Asn Phe

```
<210> 177
<211> 191
<212> PRT
<213> Homo sapiens
```

<400> 177

Met Gly Asn Trp Val Val Asn His Trp Phe Ser Val Leu Phe Leu Val  
1 5 10 15

Val Trp Leu Gly Leu Asn Val Phe Leu Phe Val Asp Ala Phe Leu Lys  
20 25 30

Tyr Glu Lys Ala Asp Lys Tyr Tyr Tyr Thr Arg Lys Ile Leu Gly Ser  
35 40 45

Thr Leu Ala Cys Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn Ser  
50 55 60

Thr Leu Ile Leu Leu Pro Val Cys Arg Asn Leu Leu Ser Phe Leu Arg  
65 70 75 80

Gly Thr Cys Ser Phe Cys Ser Arg Thr Leu Arg Lys Gln Leu Asp His  
85 90 95

Asn Leu Thr Phe His Lys Leu Val Ala Tyr Met Ile Cys Leu His Thr  
100 105 110

Ala Ile His Ile Ile Ala His Leu Phe Asn Phe Asp Cys Tyr Ser Arg  
115 120 125

Ser Arg Gln Ala Thr Asp Gly Ser Leu Ala Ser Ile Leu Ser Ser Leu  
130 135 140

Ser His Asp Glu Lys Lys Gly Gly Ser Trp Leu Asn Pro Ile His Pro  
145 150 155 160

His Ile Thr Pro Thr Val Tyr Met Phe Thr Val Thr Phe Asp Met Val  
165 170 175

Leu Ser Ser Val Asn Ser Asn Leu Leu Phe Leu Leu Ile Lys Lys  
180 185 190

<210> 178  
<211> 1683  
<212> DNA  
<213> Homo sapiens

<400> 178  
aagcctcttt catcggggca cagacttcct ttacttctt ccttttgccc tctcgctcc 60  
tctctctggg aagaagcgga ggcgcggcg gtgcggcgg atagcaacag gccggggccac 120  
tgaggcgggtg cggaaagttt ctgtctggga gtgcggaact ggggocgggt tgggtgtactg 180  
ctcggagcaa tggagccagc cttcggggag gtgaaccagc tgggaggagt gttcgtgaac 240  
gggaggccgc tgcccaacgc catcgggctt cgcacgtgg aactggccca actgggcatc 300  
cgaccgtgtg acatcagccg ccagctacgg gtctcgacg gctgcgtcag caagatcctg 360  
gcgcgataca acgagacggg ctgatcttg ccaggagcca tcgggggcag caagccccgg 420  
gtcactaccc ccaccgtggg gaaacacatc cggacctaca agcagagaga ccccggcac 480  
ttcgctggg agatccggga ccgcctgctg gcggacggcg tgtgcgacaa gtacaatgtg 540  
ccctccgtga gctccatcag ccgcattctg cgacaacaaga tcggcaactt ggcccagcag 600  
ggtcattacg actcatacaa gcagcaccag ccgacgccgc agccagcgct gccctacaac 660  
cacatctact cgtaccccag ccctatcacg gcggcgcccg ccaagggtgcc cagccaccc 720  
ggggtgcctg ccattcccgg ttccggtggc atgccgcga cctggccctc ctgcactcc 780

```

gtcaccgaca tcctgggcat ccgctccatc accgaccaag tgagcgacag ctccccctac      840
cacagcccca aggtggagga gtggagcagc ctgggccgca acaacttccc cgccgccgcc      900
ccgcatgctg tgaacgggtt ggagaagga gccctggagc aggaagccaa gtacggtcag      960
gcaccaaatt gtctcccagc tgtgggcagt tttgtgtcag catccagcat ggctccttac     1020
cctaccccag cccaagtgtc gccttacatg acctacagtg ctgctccttc tggttatgtt     1080
gctggacatg ggtggcaaca tgctgggggc acctcattgt ctccccacaa ctgtgacatt     1140
ccggcatcgc tggcgttcaa gggaatgcag gcagccagag aaggtagtca ttctgtcacg     1200
gcttcgcgcg tctgatggga aattccgtct ccagcagctt caccggggtc tccctgtctc     1260
agcacctcct cccccaattc ccaggtctca catcccaccc ctctgccct ccaacccttc     1320
tgccctgaaa gctggctgta cggactcaca tcctttgtgc taatgacact tacatatttc     1380
ttgccataac ttttctcttg cagaaaaact gacatgactt taggatttaa aaacaagagc     1440
aacaataagc attgaatgag acatttgtgt tgcccacata ctgtcttaac ataacaaaga     1500
aacctacacc cctcaaaggg ttaaggaac ttacaaaact agtctttggt aaaaccacat     1560
gtgtatatatt attctaaatc aacctgaact ttgaaatgt gcaattgttg agattttgca     1620
aatcaataa aggaaaatac ttatagaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa     1680
aaa                                                                    1683

```

```

<210> 179
<211> 341
<212> PRT
<213> Homo sapiens

```

```

<400> 179

```

```

Met Glu Pro Ala Phe Gly Glu Val Asn Gln Leu Gly Gly Val Phe Val
1           5           10           15

```

```

Asn Gly Arg Pro Leu Pro Asn Ala Ile Arg Leu Arg Ile Val Glu Leu
          20           25           30

```

```

Ala Gln Leu Gly Ile Arg Pro Cys Asp Ile Ser Arg Gln Leu Arg Val
          35           40           45

```

```

Ser His Gly Cys Val Ser Lys Ile Leu Ala Arg Tyr Asn Glu Thr Gly
          50           55           60

```

Ser Ile Leu Pro Gly Ala Ile Gly Gly Ser Lys Pro Arg Val Thr Thr  
 65 70 75 80  
 Pro Thr Val Val Lys His Ile Arg Thr Tyr Lys Gln Arg Asp Pro Gly  
 85 90 95  
 Ile Phe Ala Trp Glu Ile Arg Asp Arg Leu Leu Ala Asp Gly Val Cys  
 100 105 110  
 Asp Lys Tyr Asn Val Pro Ser Val Ser Ser Ile Ser Arg Ile Leu Arg  
 115 120 125  
 Asn Lys Ile Gly Asn Leu Ala Gln Gln Gly His Tyr Asp Ser Tyr Lys  
 130 135 140  
 Gln His Gln Pro Thr Pro Gln Pro Ala Leu Pro Tyr Asn His Ile Tyr  
 145 150 155 160  
 Ser Tyr Pro Ser Pro Ile Thr Ala Ala Ala Ala Lys Val Pro Thr Pro  
 165 170 175  
 Pro Gly Val Pro Ala Ile Pro Gly Ser Val Ala Met Pro Arg Thr Trp  
 180 185 190  
 Pro Ser Ser His Ser Val Thr Asp Ile Leu Gly Ile Arg Ser Ile Thr  
 195 200 205  
 Asp Gln Val Ser Asp Ser Ser Pro Tyr His Ser Pro Lys Val Glu Glu  
 210 215 220  
 Trp Ser Ser Leu Gly Arg Asn Asn Phe Pro Ala Ala Ala Pro His Ala  
 225 230 235 240  
 Val Asn Gly Leu Glu Lys Gly Ala Leu Glu Gln Glu Ala Lys Tyr Gly  
 245 250 255  
 Gln Ala Pro Asn Gly Leu Pro Ala Val Gly Ser Phe Val Ser Ala Ser  
 260 265 270  
 Ser Met Ala Pro Tyr Pro Thr Pro Ala Gln Val Ser Pro Tyr Met Thr  
 275 280 285

Tyr Ser Ala Ala Pro Ser Gly Tyr Val Ala Gly His Gly Trp Gln His  
 290 295 300

Ala Gly Gly Thr Ser Leu Ser Pro His Asn Cys Asp Ile Pro Ala Ser  
 305 310 315 320

Leu Ala Phe Lys Gly Met Gln Ala Ala Arg Glu Gly Ser His Ser Val  
 325 330 335

Thr Ala Ser Ala Leu  
 340

<210> 180

<211> 1253

<212> DNA

<213> Homo sapiens

<400> 180

```

agttgcgaca gagtgtgggg ctgctgacaa atgaactggc catggagaag gaggccacag      60
agaagctgcg gaagctcctg gcctcccaga gcagcggctc cagagggtg tgggactgcc      120
tgcccgacaga cctagtgggc gagaggagtg cacaaagcaa agcagcggag tccctggagg      180
agctgcgggc ctgcatcagc accctggtgg atcggcaccg ggaggcccag cagggtgctgg      240
ctcggctgca agaagaaaac cagcagttgc gggggtcctt gtccccgtgt agggagccag      300
gcacctcctt aaaggcccca gcatccccc aagtggccgc tctggagcaa gacctgggga      360
agctggagga agagctgcgg gcagttcagg ccacgatgag cgggaagagc caggagatcg      420
gaaagctgaa gcagctgctc taccaagcca cagaggaagt ggctgagcta agggcccggg      480
aggcagccag cctacggcaa cagagaaaa ctcggggttc gctggtggcc caggctcagg      540
cttggggcca ggagctaaag gctctgctgg aaaagtataa tacggcctgc cgggaagtgg      600
gtcggctgcg ggaggcggtg gccgaggagc gccgccggag cggggacctg gccgctcagg      660
cagccgaaca agagcgccag gccagcgaga tgcgggggcg ctccgagcag tttgagaaaa      720
cggcagagct gctgaaagag aagatggagc atctcattgg ggcttgccga gacaaggaag      780
ccaagatcaa ggagttgttg aagaagctgg agcagctttc agaagagggt ctagcaattc      840
ggggagaaaa tgctcgctt gccctgcagc tgcaggattc ccagaagaac catgaagaga      900
tcatctccac ctacaggaat catctactga atgctgctcg gggttacatg gaacatgaag      960
tgtacaatat cctgctgcaa atccttagca tggaagagga gtgaggcagc ctactgtgt      1020

```

```

gccctcaggg atacgagatt ctctgttggg ataagaaacc ctggttgaca gaggttcat 1080
caggctgtgg tgggcggggg tgttggccac taggcaatgg tatgggcagg gcttcacctg 1140
acattatgga cctcagacct gagaacctgg accctggaat cagcatggat gagaccagag 1200
gaggtatgga tggaacaag ctctatggaa aataaagcat gaggcaggac ggg. 1253

```

```

<210> 181
<211> 320
<212> PRT
<213> Homo sapiens

```

```

<400> 181

```

```

Met Glu Lys Glu Ala Thr Glu Lys Leu Arg Lys Leu Leu Ala Ser Gln
1          5          10          15

```

```

Ser Ser Gly Leu Arg Gly Leu Trp Asp Cys Leu Pro Ala Asp Leu Val
          20          25          30

```

```

Gly Glu Arg Ser Ala Gln Ser Lys Ala Ala Glu Ser Leu Glu Glu Leu
          35          40          45

```

```

Arg Ala Cys Ile Ser Thr Leu Val Asp Arg His Arg Glu Ala Gln Gln
          50          55          60

```

```

Val Leu Ala Arg Leu Gln Glu Glu Asn Gln Gln Leu Arg Gly Ser Leu
65          70          75          80

```

```

Ser Pro Cys Arg Glu Pro Gly Thr Ser Leu Lys Ala Pro Ala Ser Pro
          85          90          95

```

```

Gln Val Ala Ala Leu Glu Gln Asp Leu Gly Lys Leu Glu Glu Glu Leu
          100          105          110

```

```

Arg Ala Val Gln Ala Thr Met Ser Gly Lys Ser Gln Glu Ile Gly Lys
          115          120          125

```

```

Leu Lys Gln Leu Leu Tyr Gln Ala Thr Glu Glu Val Ala Glu Leu Arg
          130          135          140

```

```

Ala Arg Glu Ala Ala Ser Leu Arg Gln His Glu Lys Thr Arg Gly Ser
145          150          155          160

```

Leu Val Ala Gln Ala Gln Ala Trp Gly Gln Glu Leu Lys Ala Leu Leu  
 165 170 175

Glu Lys Tyr Asn Thr Ala Cys Arg Glu Val Gly Arg Leu Arg Glu Ala  
 180 185 190

Val Ala Glu Glu Arg Arg Arg Ser Gly Asp Leu Ala Ala Gln Ala Ala  
 195 200 205

Glu Gln Glu Arg Gln Ala Ser Glu Met Arg Gly Arg Ser Glu Gln Phe  
 210 215 220

Glu Lys Thr Ala Glu Leu Leu Lys Glu Lys Met Glu His Leu Ile Gly  
 225 230 235 240

Ala Cys Arg Asp Lys Glu Ala Lys Ile Lys Glu Leu Leu Lys Lys Leu  
 245 250 255

Glu Gln Leu Ser Glu Glu Val Leu Ala Ile Arg Gly Glu Asn Ala Arg  
 260 265 270

Leu Ala Leu Gln Leu Gln Asp Ser Gln Lys Asn His Glu Glu Ile Ile  
 275 280 285

Ser Thr Tyr Arg Asn His Leu Leu Asn Ala Ala Arg Gly Tyr Met Glu  
 290 295 300

His Glu Val Tyr Asn Ile Leu Leu Gln Ile Leu Ser Met Glu Glu Glu  
 305 310 315 320

<210> 182  
 <211> 2839  
 <212> DNA  
 <213> Homo sapiens

<400> 182  
 ggaccccggc ctgtgccagc ttgcagagct caccaggtgc agaccctgc ggccagggcg 60  
 aggacggatc tgagcagctg ggcagcaggt gccaccgcct gtgggaccca gagggcttga 120  
 ggacatctgc aatgctccag aagcccaaga gcgtgaagct gcgggccctg cgcagcccga 180  
 ggaagttcgg cgtggctggc cggagctgcc aggaggtgct gcgcaagggc tgtctccgct 240  
 tccagctccc tgagcgcggt tcccggctgt gcctgtacga ggatggcacg gagctgacgg 300



aagattactt cccagtggt cccgacaacg ccgagctggt gctgctcacc ttgggccagg 360  
cctggcaggg ctatgtgagc gacatcaggc gcttcctcag tgcatttcac gagccacagg 420  
tggggctcat ccaggccgcc cagcagctgc tgtgtgatga gcaggcccca cagaggcaga 480  
ggctgctggc tgacctcctg cacaacgtca gccagaacat cgcggccgag acccgggctg 540  
aggacccgcc gtgggttgaa ggcttgaggt cccgatttca gagcaagtct ggctatctga 600  
gatacagctg tgagagccgg atccggagtt acctgagggg ggtgagctcc taccctcca 660  
cagtgggtgc ggaggctcag gaggaattcc tgcgggtcct cggctccatg tgccagaggc 720  
tccggtccat gcagtacaat ggcagctact tcgacagagg agccaagggc ggcagccgcc 780  
tctgcacacc ggaaggctgg ttctcctgcc agggtcctt tgacatggac agctgcttat 840  
caagacactc catcaacccc tacagtaaca gggagagcag gatcctcttc agcacctgga 900  
acctggatca cataatagaa aagaaacgca ccatcattcc tacactggtg gaagcaatta 960  
aggaacaaga tggaagagaa gtggactggg agtatTTTTa tggcctgctt ttacctcag 1020  
agaacctaaa actagtgcac attgtctgcc ataagaaaac caccacaag ctcaactgtg 1080  
accgagcag aatctacaaa cccagacaa ggttgaagcg gaagcagcct gtgcggaac 1140  
gccagtgaca cgtacacacc acgtcctggt ctttgtttga ggcctgacgt gggcatcatt 1200  
ttaacaggtg cttttttgt tttttgttt ttctgttttt tggctactcc agtagctcct 1260  
ggaaaaaacc ttaaaaaatg ttctctcaa atctgatttc attacatttc tgaattgttg 1320  
ggtttttttt tgttgttttg ttttgttttg tagatggagt ttacttttg ttgccaggc 1380  
tgagtgtag tggcgcgatc tcggctcagc ctcccgagta gctgggatta caggcatgtg 1440  
ccaccacgcc cggctaattg ttgtattttt agtagagacg gggtttcacc atgttggtca 1500  
ggctggtctc aaactcctga cctcaggtga tccgccacc tcagcctccc aaagtgtg 1560  
gatgacaggt gtgagccact gcgccagcc tgaatcattt cttatacctt ctgacagccc 1620  
aacttcaga ggacagctct ggggtactcg ttggatgtct gtgagtacct ggtcatacgg 1680  
gtcagtaggg ataagaattg tctctgggct gaggaattct tctgttctct ggtttcacca 1740  
gcgttgggtt tgctcatgta atgtggtcac catactcaa tgggtgtcatg gctgaagttg 1800  
gccaccttgc ttgagggaca agttgtttat gtatcagctc tctgctgggt ctccctttcc 1860  
atggcaaatg ggcagctcca tcctcttgat cttctaaatg cccaaaagag gtgtcatgct 1920  
ttgggggtac gatgtttata ctccgtaaaag aacatacaag gacattcact gctgattttt 1980

```

ttttttgttt gtttgagaca ggtctcact ctgtcgctca ggctggagtg cagtgatgca 2040
atcttggtc actgcaacct ccgcctctca ggttcaagtg gttctcctgc ctgagcctcc 2100
caagtagctg ggattacagg cacctaccac cagggccagc taatttttgt atgttttagta 2160
gtaacggggg ttcaccatgt tggccaggct gttctcgaac tcctgacctc aggtgatctg 2220
ccgcctcgg tctcccaaag tgctgggatt acaggcatga gccactgcac ctgacctgct 2280
gaattgttta taatggcaag aaataggaaa cccccaatg tctgttgaac agctatcacg 2340
ttgaaccacg tgaaactgct gttttctagg ccaaaaatgg tgagcgatca tttatttcat 2400
gattcaacct gatacattta catagtcaa aactgtgtca cagtttcagg cttttatgag 2460
gaaagcgttt ctgtgtagaa actggaagct gttcagggca tcggcagctg aacctgctc 2520
cgttggtcag cgttactatc atctcgatc atatggagct catgtcagcc gtgtgggtgg 2580
cgggtgcaca gagacggtct ggaaggaaac acgcggatct gaacagcagt aatcctgggg 2640
gatacggggg ttgggctaga ttacagaggg ctcatcttct acgtcatgta ttttatgata 2700
cttgaatttt ttgaaatggg catttatttt ataacatgtt aaaatgtact ttttaaatta 2760
agtcattttg taatatttga atttttacat ttgttgtaca atcaggaaaa gcaataaaga 2820
tttttcaaaa ataaaaaaaa 2839

```

<210> 183  
 <211> 338  
 <212> PRT  
 <213> Homo sapiens

<400> 183

```

Met Leu Gln Lys Pro Lys Ser Val Lys Leu Arg Ala Leu Arg Ser Pro
1           5           10           15

```

```

Arg Lys Phe Gly Val Ala Gly Arg Ser Cys Gln Glu Val Leu Arg Lys
          20           25           30

```

```

Gly Cys Leu Arg Phe Gln Leu Pro Glu Arg Gly Ser Arg Leu Cys Leu
          35           40           45

```

```

Tyr Glu Asp Gly Thr Glu Leu Thr Glu Asp Tyr Phe Pro Ser Val Pro
50           55           60

```

```

Asp Asn Ala Glu Leu Val Leu Leu Thr Leu Gly Gln Ala Trp Gln Gly
65           70           75           80

```

Tyr Val Ser Asp Ile Arg Arg Phe Leu Ser Ala Phe His Glu Pro Gln  
 85 90 95  
 Val Gly Leu Ile Gln Ala Ala Gln Gln Leu Leu Cys Asp Glu Gln Ala  
 100 105 110  
 Pro Gln Arg Gln Arg Leu Leu Ala Asp Leu Leu His Asn Val Ser Gln  
 115 120 125  
 Asn Ile Ala Ala Glu Thr Arg Ala Glu Asp Pro Pro Trp Phe Glu Gly  
 130 135 140  
 Leu Glu Ser Arg Phe Gln Ser Lys Ser Gly Tyr Leu Arg Tyr Ser Cys  
 145 150 155 160  
 Glu Ser Arg Ile Arg Ser Tyr Leu Arg Glu Val Ser Ser Tyr Pro Ser  
 165 170 175  
 Thr Val Gly Ala Glu Ala Gln Glu Glu Phe Leu Arg Val Leu Gly Ser  
 180 185 190  
 Met Cys Gln Arg Leu Arg Ser Met Gln Tyr Asn Gly Ser Tyr Phe Asp  
 195 200 205  
 Arg Gly Ala Lys Gly Gly Ser Arg Leu Cys Thr Pro Glu Gly Trp Phe  
 210 215 220  
 Ser Cys Gln Gly Pro Phe Asp Met Asp Ser Cys Leu Ser Arg His Ser  
 225 230 235 240  
 Ile Asn Pro Tyr Ser Asn Arg Glu Ser Arg Ile Leu Phe Ser Thr Trp  
 245 250 255  
 Asn Leu Asp His Ile Ile Glu Lys Lys Arg Thr Ile Ile Pro Thr Leu  
 260 265 270  
 Val Glu Ala Ile Lys Glu Gln Asp Gly Arg Glu Val Asp Trp Glu Tyr  
 275 280 285  
 Phe Tyr Gly Leu Leu Phe Thr Ser Glu Asn Leu Lys Leu Val His Ile  
 290 295 300

Val Cys His Lys Lys Thr Thr His Lys Leu Asn Cys Asp Pro Ser Arg  
 305 310 315 320

Ile Tyr Lys Pro Gln Thr Arg Leu Lys Arg Lys Gln Pro Val Arg Lys  
 325 330 335

Arg Gln

<210> 184  
 <211> 435  
 <212> DNA  
 <213> Homo sapiens

<400> 184  
 atgatcgctc gacatcgata cgactttttc cttttctttt cttttttttt ttttttacat 60  
 agttgttatc ttaaggtgat ttccaatttt ttttccattt acatttttcc acaagcattg 120  
 tccaactttat tctgtaacct tttcaactac cattttgaaa tttgctttta tccatgtggg 180  
 tgtttgtgat gaactacagg ttgctgactt tcttccctt ctgtaaataa agttttcttc 240  
 ctagtatgtc ctgtatctca agaggatctc atcagtggaa tcattagatc aaaggatatg 300  
 actgttgctc agctctctgt gtgtatgtaa attaataggc tgtttatttg agcagttgta 360  
 ggcttacaaa aatattgagt caaaagtata gaattcccat atattctcct cttctccctt' 420  
 ctgtcgtctt ctgcg 435

<210> 185  
 <211> 62  
 <212> PRT  
 <213> Homo sapiens

<400> 185

Met Ile Ala Arg His Arg Tyr Asp Phe Phe Leu Phe Phe Ser Phe Phe  
 1 5 10 15

Phe Phe Leu His Ser Cys Tyr Leu Lys Val Ile Ser Asn Phe Phe Ser  
 20 25 30

Ile Tyr Ile Phe Pro Gln Ala Leu Ser Thr Leu Phe Cys Asn Leu Phe  
 35 40 45

Asn Tyr His Phe Glu Ile Cys Phe Tyr Pro Cys Gly Cys Leu  
 50 55 60

<210> 186  
 <211> 368  
 <212> DNA  
 <213> Homo sapiens

<400> 186  
 tttttttttt ttttttttgg gagtaacagc tgctttttatt aacatcagaa gggcaacagt 60  
 acaggaagtt gggtagatgt ggggacaaca gagagactgt ggcagaggca ggactgcaga 120  
 tctatggaaa ttgcctggaa gagtcagctg taagggatga gaatcctgag ggtaaaagag 180  
 aaaagggaaa gactcctctt tgatcttatg aagctgaaat aacaagatct taaacatgag 240  
 tgagaatctg ttgccccaac ctaaggtgac tttaaatacca aggtaaaaaa cacggcatgg 300  
 gtattagttt gaatagggaa aatgagaact ctctttgagc tcaaaaaaaaa aaaaaaaaaa 360  
 aaaaaaatg 368

<210> 187  
 <211> 24  
 <212> PRT  
 <213> Homo sapiens

<400> 187  
 Phe Phe Phe Phe Phe Leu Gly Val Thr Ala Ala Phe Ile Asn Ile Arg  
 1 5 10 15  
 Arg Ala Thr Val Gln Glu Val Gly  
 20

<210> 188  
 <211> 27  
 <212> PRT  
 <213> Homo sapiens

<400> 188  
 Met Trp Gly Gln Gln Arg Asp Cys Gly Arg Gly Arg Thr Ala Asp Leu  
 1 5 10 15  
 Trp Lys Leu Pro Gly Arg Val Ser Cys Lys Gly  
 20 25

<210> 189  
 <211> 342  
 <212> DNA  
 <213> Homo sapiens

<400> 189  
 gagaagacga cagaaggggg ttgctgtggg ggcaagccag cagtctagga ggtggcacag 60  
 agatgacatg tgaataatga ccaaggagcc ggccctccaa gactacaggg aaaaataaca 120  
 ggggcatccc aagaagaggg aagagctggc atgaggctct gctgcagagg ccactgaggc 180  
 aagtgaaga acagagagga gcaaagcgcg gctggagtga gaccagtgga ggcagcacgc 240  
 agcacctcct gggtcactcc aagtgtgagg gcaggccctg gcacactgct tttcttaaga 300  
 attaaaaaaaa aaaaaaaaaa aaaaaaaaaa aagtcgtatc ga 342

<210> 190  
 <211> 19  
 <212> PRT  
 <213> Homo sapiens

<400> 190

Leu Leu Phe Leu Arg Ile Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
 1 5 10 15

Ser Tyr Arg

<210> 191  
 <211> 159  
 <212> DNA  
 <213> Homo sapiens

<400> 191  
 gagaagacga cagaagggag aagaagataa gatgttgga taattaagta aagacaaaga 60  
 agggaaataga gaaaagatgt aaccagagga ggagaaagag attaaatgta tgtgaatgtt 120  
 ttacaaaaaa aaaaaaaaaa aaaaaaaaag tcgtatcga 159

<210> 192  
 <211> 18  
 <212> PRT  
 <213> Homo sapiens

<400> 192

Met Tyr Val Asn Val Leu Gln Lys Lys Lys Lys Lys Lys Lys Lys Ser  
 1 5 10 15

Tyr Arg

<210> 193  
 <211> 448  
 <212> DNA  
 <213> Homo sapiens

<400> 193  
 ttttgggtgct acagatccta tttattcttt taaaaggctg catagggagc tctggtggca 60  
 caatgaatta gtgcatgata cttattgagc tcttttgtat gagcacttct gaaggctcat 120  
 ttctagaagt ggaattgccca ggtcacgtgc attttacatt ttaatggata cccagtgccca 180  
 ggcatagtgt ttctacata gcaggagctt cgtaaagatc tgtggcgtga ttacatgggtg 240  
 ccagatggcc ctctagaaaa gggacaccat tcccactccc accaaggatg accagaagag 300  
 ccaagagggt tccatttctg tcaccagggtc acagcaacac taggtttcag gatggccact 360  
 ttccctaggg cactctgct actccctagg aggagttaaa ggccctgtga tgaaaggaag 420  
 gcaacgtccg ggccgagggg aacttctc 448

<210> 194  
 <211> 29  
 <212> PRT  
 <213> Homo sapiens

<400> 194

Met Ile Leu Ile Glu Leu Phe Cys Met Ser Thr Ser Glu Gly Ser Phe  
 1 5 10 15

Leu Glu Val Glu Leu Pro Gly His Val His Phe Thr Phe  
 20 25

<210> 195  
 <211> 405  
 <212> DNA  
 <213> Homo sapiens

<400> 195  
 cccggctatg tggaaagcaa catctctgct gcagagaaaa gctatgagca gtcaccacct 60  
 aacagtgacc aatggaatgt ccagttgggg tgtgggagct ttctgggaag agatactcca 120  
 gcagctgcaa cttccatgaa tathtagcat atctgagcac agagaagact acggccagtc 180  
 ctgatgcagc tggcagcccc ttctgtgggc aaaaacatct acacagcatg tgtatgtgtg 240  
 tgagtatatg tgtctaattgt ttttaagcca gtttcatgat caggtcatta atctgataag 300  
 cactcctaga gctaggtata ctctggcttc tcctaaaggc ttctatgagt catctgacaa 360

tgaccaggct taggaatagg aatacaaata ttggggcaga tagct

405

<210> 196  
 <211> 61  
 <212> PRT  
 <213> Homo sapiens

<400> 196

Met Glu Cys Pro Val Gly Val Trp Glu Leu Ser Gly Lys Arg Tyr Ser  
 1 5 10 15

Ser Ser Cys Asn Phe His Glu Tyr Leu Ala Tyr Leu Ser Thr Glu Lys  
 20 25 30

Thr Thr Ala Ser Pro Asp Ala Ala Gly Ser Pro Phe Cys Gly Gln Lys  
 35 40 45

His Leu His Ser Met Cys Met Cys Val Ser Ile Cys Val  
 50 55 60

<210> 197  
 <211> 478  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (472)..(472)  
 <223> n = unknown

<400> 197

tttgtgggtg ggtctttttt ttattttttt aattaacaaa taataattgc ccatattcat 60  
 ggggtacaca atgatatttc catacatata atgtgtagtg atcagatcag ggtaattagc 120  
 atatccatca tctcaaacac ttatcatttc tttatgttgg aaacattcaa caacttcctt 180  
 ccagctatta gctatttgaa actacacatt attgttaact acagtcatcc tacagtggta 240  
 caggatatat taaacaataa gtatatttct taaaacatga gcaatggctt ggaagacagc 300  
 acaggtacag agattgtgtg cctagtatgg tgcgagagga gataggaaaa taggctgaag 360  
 aaagatggtg gtagtttatt tccaattttt atggatacat aatagttgta catatttatg 420  
 ggggtacatat gatattttga tacaacata caacgtataa tgatcaaadc anggtaat 478

<210> 198



<211> 60  
 <212> PRT  
 <213> Homo sapiens

<400> 198

Met Cys Ser Asp Gln Ile Arg Val Ile Ser Ile Ser Ile Ile Ser Asn  
 1 5 10 15

Thr Tyr His Phe Phe Met Leu Glu Thr Phe Asn Asn Phe Leu Pro Ala  
 20 25 30

Ile Ser Tyr Leu Lys Leu His Ile Ile Val Asn Tyr Ser His Pro Thr  
 35 40 45

Val Val Gln Asp Ile Leu Asn Asn Lys Tyr Ile Ser  
 50 55 60

<210> 199  
 <211> 1372  
 <212> DNA  
 <213> Homo sapiens

<400> 199

tttatccagg ccattgcgga aaacagggcc gatgctgtgc acccttagat attttggttt	60
cattgatctg ggggtggggcc taaacattga tactttttgt tttgaaattt ctccagacga	120
ttctgatgta tagtcagaat tgaaaactgt tgatctgaac tataagtaaa tacatatgct	180
atgttattttt aaaagaatgg attgatgatt aaacaaatag cttttattat gaaaaatttt	240
aaacagatta aagagactgt aatgaacctc atagacccat caccagaat tatcaggtat	300
tgagattttg gtatatgggc ttttatcttt ttgtttgtac ccctttctct ttttaaagca	360
aattctagac atcatacttt atacatttca aaataacttt tttactaatc acatctttca	420
cttcagtgcc gttatcacac atttaaaaaa atgccagttc cttcagatca tgtaaccag	480
tgtgtaattg aatctcctct gttgttcgaa aaaatctctt cacagttatt ttgtttgaat	540
tgggatccaa acgaagtcct caaaatgcat ttgtttttat ttaattaagt taatccatag	600
catgttcctt cttttaacct tcataccatt aaattgttgc agaaactatg ttgtttgtcc	660
tgtagaaagt tccacatgct gtagttgtct atttgcttct ygggtgttaac catttaactt	720
gctcctcttc tttgttttct gtgaatggaa attagctcta gattagaggc ttgattaggt	780
tcaacatttt tttttttttt ttttttggca agcagatatt tgggtgtcct gttcttagta	840

```

atggtgagct taatcagtag ctgcacaggg acaacctctt ccctctgtct gctgtcaagt 900
tccctattaa ccttatatct gatggtttta tccaataata aattgtttcc tgagtcagtt 960
atttcattca gaattgcaaa gtgatgattt ttagtttagt tattccttcc atgtttaatg 1020
gaattcttct gtaatgaaga acttctctca aagctgccaa ctaggggtgc cctaaagtat 1080
aatatataca agaaaaatag taatgctttt ctttttaatt gtcaaataca gtaaggaatt 1140
tcagtgagga tgtttgtgtg tgttttagag atgggggtctt gctttgttgc ccaggctgga 1200
gcgtagtgac acaatcatag ctgagtgag cctcgaattc ctggactcaa gggatcccc 1260
tgccctagcc tcctgagtaa ctaggactac aggcaggtag ctgggactac atacgtgtac 1320
cagcacaccc agctattttt taaaaaact ttgtagaatt ttgaatgagc ca 1372

```

```

<210> 200
<211> 45
<212> PRT
<213> Homo sapiens
<400> 200

```

```

Met Pro Val Pro Ser Asp His Val Thr Gln Cys Val Ile Glu Ser Pro
1          5          10          15

```

```

Leu Leu Phe Glu Lys Ile Ser Ser Gln Leu Phe Cys Leu Asn Trp Asp
          20          25          30

```

```

Pro Asn Glu Val Leu Lys Met His Phe Val Leu Phe Asn
          35          40          45

```

```

<210> 201
<211> 2518
<212> DNA
<213> Homo sapiens

```

```

<400> 201
tttgcttttg cttatttccg tccatttccc tctctgcgcg cggaccttcc ttttccagat 60
ggtgagagcc gcggggacac ccgacgccgg ggcaggctga tccacgatcc tgggtgtgcg 120
taacgccgcc tggggctccg tgggcgaggg acgtgtgggg acaggtgcac cggaaactgc 180
cagactggag agttgaggca tcggaggcgc gagaacagca ctactactgc ggcgagacga 240
gcgcggcgca tcccaaagcc cggccaaatg cgctcgtccc tgggagggga gggaggcgcg 300
cctggagcgg ggacagtctt ggtccgcgcc ctctcccgg gtctgtgccg gga'cccgga 360

```

cccgaggagcc gtcgcaggtc tcggtccaag gggccccctt tctcggaagg gcggcggcca	420
agagcagga aggtggatct caggtagcga gtctgggctt cggggacggc ggggagggga	480
gccggacggg aggatgagct cccctggcac cgagagcgcg ggaaagagcc tgcagtaccg	540
agtggaccac ctgctgagcg ccgtggagaa tgagctgcag gcgggcagcg agaagggcga	600
ccccacagag cgcgaaactgc gcgtgggcct ggaggagagc gagctgtggc tgcgcttcaa	660
ggagctcacc aatgagatga tcgtgaccaa gaacggcagg aggatgtttc cgggtctgaa	720
ggtgaacgtg tctggcctgg accccaacgc catgtactcc ttctgtctgg acttcgtggc	780
ggcggacaac caccgctgga agtacgtgaa cggggaatgg gtgccggggg gcaagccgga	840
gccgcaggcg cccagctgcg tctacatcca cccgactcg cccaacttcg gggccactg	900
gatgaaggct cccgtctcct tcagcaaagt caagctcacc aacaagctca acggaggggg	960
ccagatcatg ctgaactcct tgcataagta tgagcctcga atccacatag tgagagttgg	1020
gggtccacag cgcgatgatca ccagccactg cttccctgag acccagttca tagcggtgac	1080
tgcttatcag aacgaggaga tcacagctct taaaattaag tacaatccat ttgcaaaagc	1140
tttcttgat gcaaaggaaa gaagtgatca caaagagatg atggaggaac ccggagacag	1200
ccagcaacct ggttactccc aatgggggtg gcttcttctt ggaaccagca ccctgtgtcc	1260
acctgcaaat cctcatcctc agtttggagg tgccctctcc ctccctcca cgcacagctg	1320
tgacaggtag ccaacctga ggagccaccg gtctcacc ccacccagcc cctatgtcga	1380
tcggaacaat tctccaacct attctgacaa ctacactgca tgtttatcca tgctgcaatc	1440
ccatgacaat tgggtccagcc ttggaatgcc tgcccatccc agcatgctcc ccgtgagcca	1500
caatgccagc ccacctacca gctccagtca gtacccagc ctgtggtctg tgagcaacgg	1560
cgcgctcacc ccgggtctcc aggcagcagc cgtgtccaac gggctggggg ccagttctt	1620
ccggggctcc cccgcgact acacaccct caccatccg gtctcggcgc cctcttctc	1680
gggatcccca ctgtacgaag gggcgccgc gccacagac atcgtggaca gccagtacga	1740
cgcgcagcc caaggccgcc tcatagcctc atggacacct gtgtcgccac cttcatgtg	1800
aagcagcaag gccaggtcc cgaaagatgc agtgactttt tgtcgtggca gccagtggg	1860
actggattga cctactaggt acccagtggc agtctcaggt taagaaggaa atgcagcctc	1920
agtaacttcc ttttcaaagc agtggaggag cacacggcac ctttcccag agccccagca	1980
tcccttgctc acacctgcag tagcgggtgct gtcccagggt gcttacagat gaacccaact	2040

gtggagatga tgcagttggc ccaacctcac tgacggtgaa aaaatgtttg ccagggtcca 2100  
 gaaaotTTTT ttggtttatt tctcatacag tgtattggca actttggcac accagaattt 2160  
 gtaaaactcca ccagtcctac tttagtgaaga taaaaagcac actcttaatc ttcttccttg 2220  
 ttgctttcaa gtagttagag ttgagctgtt aaggacagaa taaaatcata gttgaggaca 2280  
 gcagggtttta gttgaattga aaatttgact gctctgcccc ctagaatgtg tgtattttta 2340  
 gcatatgtag ctaatctctt gtgttggtta actataactg tttcataattt ttcttttgac 2400  
 aaagtagcca aagacaatca gcagaaagca ttttctgcaa aataaacgca atatgcaaaa 2460  
 tgtgattcgt ccagttatta gtgaagcccc tccttttgtg agtatttact gtttattg 2518

<210> 202  
 <211> 435  
 <212> PRT  
 <213> Homo sapiens

<400> 202

Met Ser Ser Pro Gly Thr Glu Ser Ala Gly Lys Ser Leu Gln Tyr Arg  
 1 5 10 15

Val Asp His Leu Leu Ser Ala Val Glu Asn Glu Leu Gln Ala Gly Ser  
 20 25 30

Glu Lys Gly Asp Pro Thr Glu Arg Glu Leu Arg Val Gly Leu Glu Glu  
 35 40 45

Ser Glu Leu Trp Leu Arg Phe Lys Glu Leu Thr Asn Glu Met Ile Val  
 50 55 60

Thr Lys Asn Gly Arg Arg Met Phe Pro Val Leu Lys Val Asn Val Ser  
 65 70 75 80

Gly Leu Asp Pro Asn Ala Met Tyr Ser Phe Leu Leu Asp Phe Val Ala  
 85 90 95

Ala Asp Asn His Arg Trp Lys Tyr Val Asn Gly Glu Trp Val Pro Gly  
 100 105 110

Gly Lys Pro Glu Pro Gln Ala Pro Ser Cys Val Tyr Ile His Pro Asp  
 115 120 125

Ser Pro Asn Phe Gly Ala His Trp Met Lys Ala Pro Val Ser Phe Ser  
 130 135 140  
 Lys Val Lys Leu Thr Asn Lys Leu Asn Gly Gly Gly Gln Ile Met Leu  
 145 150 155 160  
 Asn Ser Leu His Lys Tyr Glu Pro Arg Ile His Ile Val Arg Val Gly  
 165 170 175  
 Gly Pro Gln Arg Met Ile Thr Ser His Cys Phe Pro Glu Thr Gln Phe  
 180 185 190  
 Ile Ala Val Thr Ala Tyr Gln Asn Glu Glu Ile Thr Ala Leu Lys Ile  
 195 200 205  
 Lys Tyr Asn Pro Phe Ala Lys Ala Phe Leu Asp Ala Lys Glu Arg Ser  
 210 215 220  
 Asp His Lys Glu Met Met Glu Glu Pro Gly Asp Ser Gln Gln Pro Gly  
 225 230 235 240  
 Tyr Ser Gln Trp Gly Trp Leu Leu Pro Gly Thr Ser Thr Leu Cys Pro  
 245 250 255  
 Pro Ala Asn Pro His Pro Gln Phe Gly Gly Ala Leu Ser Leu Pro Ser  
 260 265 270  
 Thr His Ser Cys Asp Arg Tyr Pro Thr Leu Arg Ser His Arg Ser Ser  
 275 280 285  
 Pro Tyr Pro Ser Pro Tyr Ala His Arg Asn Asn Ser Pro Thr Tyr Ser  
 290 295 300  
 Asp Asn Ser Pro Ala Cys Leu Ser Met Leu Gln Ser His Asp Asn Trp  
 305 310 315 320  
 Ser Ser Leu Gly Met Pro Ala His Pro Ser Met Leu Pro Val Ser His  
 325 330 335  
 Asn Ala Ser Pro Pro Thr Ser Ser Ser Gln Tyr Pro Ser Leu Trp Ser  
 340 345 350

Val Ser Asn Gly Ala Val Thr Pro Gly Ser Gln Ala Ala Ala Val Ser  
355 360 365

Asn Gly Leu Gly Ala Gln Phe Phe Arg Gly Ser Pro Ala His Tyr Thr  
370 375 380

Pro Leu Thr His Pro Val Ser Ala Pro Ser Ser Ser Gly Ser Pro Leu  
385 390 395 400

Tyr Glu Gly Ala Ala Ala Ala Thr Asp Ile Val Asp Ser Gln Tyr Asp  
405 410 415

Ala Ala Ala Gln Gly Arg Leu Ile Ala Ser Trp Thr Pro Val Ser Pro  
420 425 430

Pro Ser Met  
435

<210> 203  
<211> 491  
<212> DNA  
<213> Homo sapiens

<400> 203  
aaaattcaac aatcctttta ttttagctctt tgggtgccgac gcagtgccta tgtacctata 60  
tgcacgcccc cctcccccaa ggcttacagt ctgagggaaa aaaaccacag tccccacca 120  
acctgggaca aaactagacg acctcatggg ggggatgcgg ggaggagaaa cccccctcc 180  
caaccagga agccagagaa cgccaccggg gcacacaggt cgcctctgct gagtctgtag 240  
gttcggtctg ggctgagcgc cagcagcaat ctggcctccc atcccttcct ctgggttcct 300  
ttctcgagga gtaagcgtgc tcccaaagaa gtcgctagta tctgaggcca tctgggtggag 360  
agcagtggca tggtaaccga gggctcaaag tcgggctcgc attccgggga ctgcgagaga 420  
ctggactgcg cctgcggcaa ggaaggacgg agcagagccc cctgaggccg agcgggagcc 480  
agacccaagg a 491

<210> 204  
<211> 79  
<212> PRT  
<213> Homo sapiens

<400> 204

Lys Ile Gln Gln Ser Phe Tyr Leu Ala Leu Trp Cys Arg Arg Ser Ala  
 1 5 10 15

Tyr Val Pro Ile Cys Thr Pro Pro Ser Pro Lys Ala Tyr Ser Leu Arg  
 20 25 30

Glu Lys Asn His Ser Pro His Pro Thr Trp Asp Lys Thr Arg Arg Pro  
 35 40 45

His Gly Gly Asp Ala Gly Arg Arg Asn Pro Pro Ser Gln Pro Arg Lys  
 50 55 60

Pro Glu Asn Ala Thr Gly Ala His Arg Ser Pro Leu Leu Ser Leu  
 65 70 75

<210> 205  
 <211> 500  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (482)..(482)  
 <223> n = unknown

<400> 205  
 gatgaaggcc agtaacatta cttgccattc attataactc acaattgctg aacaactaca 60  
 tgttctagac actgtgccaa attttctaca tttaaaagaa atttagttct atccataacc 120  
 attgcttggc gtttaaatta aaaaaaaaaa agttctaaca attccattct gtaggtgagt 180  
 gttagtattg tcattttata aatgagaaaa ctgaggctga ggcattaact tgcctaaaag 240  
 acacataacg tagcaagatt tgaactctga atctgtagtt ttcattatgg agcataacta 300  
 cgctgagacg acaaactctga aatctgccat aaaaaagatg actgggtggaa tttatatattc 360  
 taatataaga acagaataga caacaaacag ctagacaaca aagaatctta cctgaacaca 420  
 gaagatggac ttgtggtaaa gtatatgaaa atgcctccaa gttccctgcc tccctatctt 480  
 tntaaaataa tattttcccc 500

<210> 206  
 <211> 30  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 206

Met Glu His Asn Tyr Ala Glu Thr Thr Asn Leu Lys Ser Ala Ile Lys  
 1 5 10 15

Lys Met Thr Gly Gly Ile Tyr Ile Ser Asn Ile Arg Thr Glu  
 20 25 30

&lt;210&gt; 207

&lt;211&gt; 394

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 207

agtctggccg cgctcttcga ctcgctgcgc cacgtccccc ggggtgccga gccggcgggg 60  
 ggtgaggtgg ctgcgccggc ggccgggcta ggaggtgcgg gcactggggg cgcgggaggg 120  
 gacgtggcag gccccgcggg ggccacggcg atcccagggg ccaggaaggt cccgctgcgg 180  
 gcacgcaatc tgcctccgtc cttcttcacg gagccgtccc gggcaggcgg cgggcgtgtg 240  
 gcccgctcggg gccggacgtg agcttggggc acctggagaa gggcgaggag gccgtggagt 300  
 tctttgagct gctggggccc gactacggcg ccggcacgga ggcgggagtc ttgcttgccg 360  
 ccgagcctct cgacgggttc cccgccggag cctt 394

&lt;210&gt; 208

&lt;211&gt; 86

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 208

Ser Leu Ala Ala Leu Phe Asp Ser Leu Arg His Val Pro Gly Gly Ala  
 1 5 10 15

Glu Pro Ala Gly Gly Glu Val Ala Ala Pro Ala Ala Gly Leu Gly Gly  
 20 25 30

Ala Gly Thr Gly Gly Ala Gly Gly Asp Val Ala Gly Pro Ala Gly Ala  
 35 40 45

Thr Ala Ile Pro Gly Ala Arg Lys Val Pro Leu Arg Ala Arg Asn Leu  
 50 55 60

Pro Pro Ser Phe Phe Thr Glu Pro Ser Arg Ala Gly Gly Gly Arg Val  
 65 70 75 80



Ala Arg Arg Gly Arg Thr  
85

<210> 209  
<211> 430  
<212> DNA  
<213> Homo sapiens

<400> 209  
atgatcgctt tggagtcgat tcgacttttt tttttttttt tttttttttt taagagacag 60  
agtcccaatc agtcacccag gctagagtgc agtggtataa gcatggcaca ttgtaacctc 120  
caactcctgg cctcaactga tcctcttgcc tcaggctcct gagtagctgg gactataggc 180  
acatacgatc atgcctggct aatttttaat ttttttagag atgggatctc gctatgttgc 240  
ccaggctggg ctcaaactcc tggcccggag cagtcacccct gcctcagcct cccaaagcgc 300  
taggattaca ggcccaagcc actgtgcctg gtcagggtgc tttgagagtg gtgctatccc 360  
actgaactgg tgagaaagtt gagtagaacc aaagaaagaa aacttgatag aagcaagaat 420  
tatgattgcg 430

<210> 210  
<211> 53  
<212> PRT  
<213> Homo sapiens

<400> 210

Met Ile Ala Leu Glu Ser Ile Arg Leu Phe Phe Phe Phe Phe Phe Phe  
1 5 10 15

Phe Lys Arg Gln Ser Pro Asn Gln Ser Pro Arg Leu Glu Cys Ser Gly  
20 25 30

Ile Ser Met Ala His Cys Asn Leu Gln Leu Leu Ala Ser Thr Asp Pro  
35 40 45

Leu Ala Ser Gly Ser  
50

<210> 211  
<211> 411  
<212> DNA  
<213> Homo sapiens

<400> 211  
gagaagagac agaaggggta ctagctaagt ttttggaag tcaaaaatta tacaaaaatt 60  
tctgactgtg caggggtcag tgagtctaac cgctgacta ttgaagggtc aactgtactt 120  
gaaaaaagtc acttgtagca ggaagaatag catgggaaaa gattcaagac cacatagtta 180  
agtctcagat ttctagctgg tgcatacatc aactgcctct tctcaacata caccctgcaa 240  
atccttttatt ccagatcctt tttgtgaaaa atcaactat tattccctat gataagatct 300  
aaaagaactg acagatgtta ctctatacta acaattccat tttcacaag aagcatctct 360  
gagttagtaa aaaaaaaaaa aaaaaaaaaa gaggaaaagt cgtatcgatg t 411

<210> 212  
<211> 41  
<212> PRT  
<213> Homo sapiens

<400> 212

Met Ile Arg Ser Lys Arg Thr Asp Arg Cys Tyr Ser Ile Leu Thr Ile  
1 5 10 15

Pro Phe Ser Gln Arg Ser Ile Ser Glu Leu Val Lys Lys Lys Lys Lys  
20 25 30

Lys Lys Glu Glu Lys Ser Tyr Arg Cys  
35 40

<210> 213  
<211> 161  
<212> DNA  
<213> Homo sapiens

<400> 213  
gcctactact actatacggc tgcgagatga cgacagaagg gctcattatt ccatatTTTT 60  
ccaccacctt cttcccaaag gcacgtgtac ctgcctgacc tcctctgcct gagaagggtc 120  
cagaacaaag taaaaaaaaa aaaaaaaaaa agtcgtatcg a 161

<210> 214  
<211> 36  
<212> PRT  
<213> Homo sapiens

<400> 214

Pro Thr Thr Thr Ile Arg Leu Arg Asp Asp Asp Arg Arg Ala His Tyr



<213> Homo sapiens

<400> 217

```
catcatcatc atgatcgctc gacatcgata cgactttttt tttttttttt ttttaggtaa      60
gagaaaatct gaaaatgaga cgtttcattc acctccatat ctttactgct cagacacatt    120
ggctgatatc tgcttggctt tacttccagt gctttctcta attgcagagg catgtgaagg    180
ccgtaatctt tagaagagcc ttcaaagcct tgcattggtct ggccctgcct gtctttccag    240
cctcaccctt gtgaccgtct ccccttctgt cgtcttctcg cagc                      284
```

<210> 218

<211> 60

<212> PRT

<213> Homo sapiens

<400> 218

```
Met Ile Ala Arg His Arg Tyr Asp Phe Phe Phe Phe Phe Phe Leu Gly
1           5           10           15
```

```
Lys Arg Lys Ser Glu Asn Glu Thr Phe His Ser Pro Pro Tyr Leu Tyr
20           25           30
```

```
Cys Ser Asp Thr Leu Ala Asp Ile Cys Leu Ala Leu Leu Pro Val Leu
35           40           45
```

```
Ser Leu Ile Ala Glu Ala Cys Glu Gly Arg Asn Leu
50           55           60
```

<210> 219

<211> 265

<212> DNA

<213> Homo sapiens

<400> 219

```
gagaagacga cagaaggggt ctccaggcct cagactgtgg agctttcacg ctgcgacaac      60
ctcacagact gtgcctgatt tatggatgac attttaatta agatgttaca tctaacttta    120
aagaaaagta gttatttaga accattgtgt atgttttaaag cacggtacaa atatagcaca    180
tttcccaaac caaagaacag tgcattgcag gaaaaaatag cagctcgcaa aaaaaaaaaa    240
aaaaaaaaaa aaaaagtcgt atcga                                           265
```

<210> 220

<211> 60

<212> PRT  
 <213> Homo sapiens

<400> 220

Met Asp Asp Ile Leu Ile Lys Met Leu His Leu Thr Leu Lys Lys Ser  
 1 5 10 15

Ser Tyr Leu Glu Pro Leu Cys Met Phe Lys Ala Arg Tyr Lys Tyr Ser  
 20 25 30

Thr Phe Pro Lys Pro Lys Asn Ser Ala Leu Gln Glu Lys Ile Ala Ala  
 35 40 45

Arg Lys Lys Lys Lys Lys Lys Lys Lys Val Val  
 50 55 60

<210> 221  
 <211> 291  
 <212> DNA  
 <213> Homo sapiens

<400> 221  
 catcatcatc atcatgatcg ctcgacatcg atacgacttt tttttttttt ttttttaaatt 60  
 aaagacaggg tttcaccctg ttggccagga tggctcttgaa ctctgactt caggctcgtcc 120  
 tcctgccttg gcctcccaaa gtgctgggat tacagacgtg agccaccgca ccagcctgt 180  
 ttagtgtttg atgcatagta ttttttagat ggctattgaa tgcattgtaa tgcgtacata 240  
 atctttttta atctcgttct tccatctgcc cttctgtcgt cttctcgcag c 291

<210> 222  
 <211> 32  
 <212> PRT  
 <213> Homo sapiens

<400> 222

His His His His His Asp Arg Ser Thr Ser Ile Arg Leu Phe Phe Phe  
 1 5 10 15

Phe Phe Leu Asn Lys Asp Arg Val Ser Pro Cys Trp Pro Gly Trp Ser  
 20 25 30

<210> 223  
 <211> 216  
 <212> DNA

<213> Homo sapiens

<400> 223

```

gaaagacgac agaaggaag agtggctctg gaaggcctct gtaaggaagt agcattttaa 60
tagagtgaaa aactcagtaa cctagagcag cagcgtccaa tagaaatata atgtgaggcc 120
aggcgcggtg gctcacatct gtaatctcag cactttggga gggcgacaag agtgaaactg 180
gctctcaaaa aaaaaaaaaa aaaaaagtcg tatcga 216

```

<210> 224

<211> 20

<212> PRT

<213> Homo sapiens

<400> 224

```

Glu Arg Arg Gln Lys Gly Arg Val Val Trp Glu Gly Leu Cys Lys Glu
1           5           10           15

```

```

Val Ala Phe Lys
          20

```

<210> 225

<211> 235

<212> DNA

<213> Homo sapiens

<400> 225

```

cgagaagacg acagaaggga gcaagtatct gaaaaacatt gcctggtaca cagtacctct 60
caaactgcaa gaacgtaaga aatctttgtt cactataaaa ttacagacct gtacaaactt 120
tttctaaaaa gtaatgtatt ctcttaaaac aatggctttt ctcttttgca aaagcacagg 180
tactttttcc tggcaaaaaa aaaaaaaaaa aaaaaaaaaa aagtcgtatc gatgt 235

```

<210> 226

<211> 34

<212> PRT

<213> Homo sapiens

<400> 226

```

Met Tyr Ser Leu Lys Thr Met Ala Phe Leu Phe Cys Lys Ser Thr Ala
1           5           10           15

```

```

Thr Phe Ser Trp Gln Lys Lys Lys Lys Lys Lys Lys Lys Ser Tyr
          20           25           30

```

Arg Cys

<210> 227  
 <211> 515  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> misc\_feature  
 <222> (497)..(497)  
 <223> n = unknown

<400> 227  
 gcggccgcgg ctgggacccc agctccggcc ccggccccgg ctgcgagctg cgctgccgtc 60  
 ccggcgcctc tttagcaggg gagctgcaca gcagctgcca tggtgctaca aactgcatcc 120  
 tgggaggcat gtccctctca ggccgtttaa agagaaacac tccgaggctc gtcggaggct 180  
 gccggaaccc agacagctcc atctacagcc ggtaggagcg aacagtgtcg agcgagccgc 240  
 ccggcggcga cggacacgcc ctgagcccg ggcagcccggt cgtggagccc gggccgaacc 300  
 gccggggcct cccaccctcc aggaccctcc ggcctctcac ctgggggtcct cgctgcca 360  
 ggcaccctcg ggcgaggccg ggaggcgcgc gggcggaggc gcagtcggag cgcgagccc 420  
 aggcgacgtg ccgggggtctg gaggcggctt gattggtcc gacagccttc ctccgccga 480  
 tccctgcgc ctctcanacc cagaaccgg gtcgt 515

<210> 228  
 <211> 168  
 <212> PRT  
 <213> Homo sapiens  
  
 <220>  
 <221> MISC FEATURE  
 <222> (163)..(163)  
 <223> X = unknown

&lt;400&gt; 228

Leu Gly Pro Gln Leu Arg Pro Arg Pro Arg Leu Arg Ala Ala Leu Pro  
 1 5 10 15

Ser Arg Arg Leu Phe Ser Arg Gly Ala Ala Gln Gln Leu Pro Cys Cys  
 20 25 30

Tyr Lys Leu His Pro Gly Arg His Val Pro Leu Arg Pro Phe Lys Glu  
 35 40 45

Lys His Ser Glu Ala Arg Arg Arg Leu Pro Glu Pro Arg Gln Leu His  
 50 55 60

Leu Gln Pro Val Gly Ala Asn Ser Val Glu Arg Ala Ala Arg Arg Arg  
 65 70 75 80

Arg Thr Arg Pro Glu Pro Gly Pro Ala Arg Arg Gly Ala Arg Ala Glu  
 85 90 95

Pro Pro Gly Pro Pro Thr Leu Gln Asp Pro Pro Ala Ser His Leu Gly  
 100 105 110

Ser Ser Pro Ala Gln Ala Pro Ser Gly Glu Ala Gly Arg Arg Ala Gly  
 115 120 125

Gly Gly Ala Val Gly Ala Arg Ser Pro Gly Asp Val Pro Gly Ser Gly  
 130 135 140

Gly Gly Leu Ile Gly Ser Asp Ser Leu Pro Pro Ala Asp Pro Leu Arg  
 145 150 155 160

Leu Ser Xaa Pro Glu Pro Gly Ser  
 165

<210> 229  
 <211> 311  
 <212> DNA  
 <213> Homo sapiens

<400> 229  
 taagaaaaat tttgaatatt tttattgaat tocaatatag ttactctgaa aaaacaaatt 60  
 agacagatat cctaaattga aaatcatgat gtacaaaacc cactgtcatt accaataaaa 120  
 agttttaaatt aaagtgtcaa gattgatatt tacagaaca gcattcatat atcaaaaacc 180  
 tctctctttt ttataccaaa tgattaaggt atactgaaaa ttacacacct caagaaaata 240  
 tatcagtaga tgaaatatta tcactgaaga tagtcacata aggcattgatt gttttgggaa 300  
 tttaaataaa a 311

<210> 230



<211> 248  
 <212> DNA  
 <213> Homo sapiens

<400> 230  
 gagaagacga cagaagggtt atttggtgct ggagctctcc aaattaagaa tgggcagtga 60  
 caaactttga acaggtaaca aacaataaat tcaaagtata ttaggatta aacagtcaat 120  
 ttctaaatgg gagtctatca tgtctcccct ttgcaatact ggcttcccaa caggaattct 180  
 atacttgtcc agtccacat aatgggtatt ctcattaaaa aaaaaaaaaa aaaaaaagaa 240  
 aaaagtcg 248

<210> 231  
 <211> 40  
 <212> PRT  
 <213> Homo sapiens

<400> 231  
 Met Gly Val Tyr His Val Ser Pro Leu Gln Tyr Trp Leu Pro Asn Arg  
 1 5 10 15  
 Asn Ser Ile Leu Val Gln Ser Thr Ile Met Gly Ile Leu Ile Lys Lys  
 20 25 30  
 Lys Lys Lys Lys Lys Glu Lys Ser  
 35 40

<210> 232  
 <211> 406  
 <212> DNA  
 <213> Homo sapiens

<400> 232  
 attttctatg gttttattgc ctaaataata agtattatta gttatttatt gttacataac 60  
 aaattactcc caaacttagc acttacatca acatgcgttg ctatttcagt ttctccaggt 120  
 taggaatcca ggtacagatt agctggctga gggctctctt caagggtgca gttagaatag 180  
 tggtcagggc agcagagcta caatcttctc gagtttcagc tgggcaggat ccgcttccag 240  
 gctcactcag tggttgttgg caggattcag ttccttgtgg gttgttggat tgagggcctc 300  
 agttcctcaa tggctagtgg ctggggggccc cttagatttc ctcctacatg ggcgtctata 360  
 gagcagctca cagcattgaa gctagcttca ttaaacaagc tttcac 406

<210> 233  
 <211> 66  
 <212> PRT  
 <213> Homo sapiens

<400> 233

Met Arg Cys Tyr Phe Ser Phe Ser Arg Leu Gly Ile Gln Val Gln Ile  
 1 5 10 15

Ser Trp Leu Arg Val Ser Leu Lys Gly Ala Val Arg Ile Val Val Arg  
 20 25 30

Ala Ala Glu Leu Gln Ser Ser Arg Val Ser Ala Gly Gln Asp Pro Leu  
 35 40 45

Pro Gly Ser Leu Ser Gly Cys Trp Gln Asp Ser Val Pro Cys Gly Leu  
 50 55 60

Leu Asp  
 65

<210> 234  
 <211> 589  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (576)..(576)  
 <223> n = unknown

<220>  
 <221> misc\_feature  
 <222> (583)..(583)  
 <223> n = unknown

<400> 234  
 catttaaaca catttctttg agattgagct tttggaata accacctttc caccattaca 60  
 ataagagata atttcacggt tagtctaattg tacaaattgg atttttaaaa aatgagctct 120  
 atctgtgaag cccttattcc tatagaatgt gtctttttga gtttattact tattacagac 180  
 tctaaaaaca acattgctgc tgattttcaa gtaagctgcc tcttctacat agcaaataagg 240  
 tacacttcac ttttccctga tttttcttag ggcgtgctat tgatttttat tgttgtctga 300  
 caaaataatt tatcaaaca aaggagagaaa gactaaaaaa tgtatttttc cacttttctg 360

tatcatgcat aatcagcaac aaccaatata atatttggca agagtgaaca aaaataaatt 420  
 tactcttgct ccttagaaat acaagggttc ctttttagtt acacttcttt cttttacttt 480  
 gtgtcattca gtttagagca attaaatctt cttttctccc tgcgtttcca gctcagcgcc 540  
 cattacgttc tgtctctttc cttagtgcatt tattgnatac tgngcatag 589

<210> 235

<211> 52

<212> PRT

<213> Homo sapiens

<400> 235

Met Ser Ser Ile Cys Glu Ala Leu Ile Pro Ile Glu Cys Val Phe Leu  
 1 5 10 15

Ser Leu Leu Leu Ile Thr Asp Ser Lys Asn Asn Ile Ala Ala Asp Phe  
 20 25 30

Gln Val Ser Cys Leu Phe Tyr Ile Ala Asn Arg Tyr Thr Ser Leu Phe  
 35 40 45

Pro Asp Phe Ser  
 50

<210> 236

<211> 657

<212> DNA

<213> Homo sapiens

<400> 236

ggcagcccgg agacagcctc cctggctggg aatgaacgca ggcagagct cggctccggg 60  
 ctctctcccc agggactcac aggacgtgt gcagccccac cccccaaccc agggccgggt 120  
 ttctgggact cacaagctat ggtcaggagc gagacgccga ccatggggaa aaacagattc 180  
 tgtctagacc cggccgggag ctttcccag agggctccga gacggacggc agtcgatgct 240  
 acttaggggtg gacggaagga cggcgggggt tggaagctgg gccagaaga gtgggtttgc 300  
 ctgtgtcgtt gtgggttctc tgatggggac acagaactgt ggggtcccgg gcagtaactc 360  
 gagcccgcgg acagacaggc atgtgtgggg gctgcggcac caggctgggc agcatctcag 420  
 gaagcaagtg agtacctgtg cttggttcca aggcggccat gaacttacct cactgttcag 480  
 gaaacagtag aggacggcca ccaccaggcc ctgcaatgag aagagatggg caggcaggac 540

ccgcgctcgg gggagggcgg ccgcctcgc acacctacct ggaacgaccc gaggcacagc 600  
 tcaaacagta tctggtatct ggaggagatg ctgatgggaa acacggcaaa caccatg 657

<210> 237  
 <211> 438  
 <212> PRT  
 <213> Homo sapiens

<400> 237

Met Arg Thr Leu Leu Pro Pro Ala Leu Leu Thr Cys Trp Leu Leu Ala  
 1 5 10 15

Pro Val Asn Ser Ile His Pro Glu Cys Arg Phe His Leu Glu Ile Gln  
 20 25 30

Glu Glu Glu Thr Lys Cys Thr Glu Leu Leu Arg Ser Gln Thr Glu Lys  
 35 40 45

His Lys Ala Cys Ser Gly Val Trp Asp Asn Ile Thr Cys Trp Arg Pro  
 50 55 60

Ala Asn Val Gly Glu Thr Val Thr Val Pro Cys Pro Lys Val Phe Ser  
 65 70 75 80

Asn Phe Tyr Ser Lys Ala Gly Asn Ile Ser Lys Asn Cys Thr Ser Asp  
 85 90 95

Gly Trp Ser Glu Thr Phe Pro Asp Phe Val Asp Ala Cys Gly Tyr Ser  
 100 105 110

Asp Pro Glu Asp Glu Ser Lys Ile Thr Phe Tyr Ile Leu Val Lys Ala  
 115 120 125

Ile Tyr Thr Leu Gly Tyr Ser Val Ser Leu Met Ser Leu Ala Thr Gly  
 130 135 140

Ser Ile Ile Leu Cys Leu Phe Arg Lys Leu His Cys Thr Arg Asn Tyr  
 145 150 155 160

Ile His Leu Asn Leu Phe Leu Ser Phe Ile Leu Arg Ala Ile Ser Val  
 165 170 175

Leu Val Lys Asp Asp Val Leu Tyr Ser Ser Ser Gly Thr Leu His Cys  
 180 185 190  
 Pro Asp Gln Pro Ser Ser Trp Val Gly Cys Lys Leu Ser Leu Val Phe  
 195 200 205  
 Leu Gln Tyr Cys Ile Met Ala Asn Phe Phe Trp Leu Leu Val Glu Gly  
 210 215 220  
 Leu Tyr Leu His Thr Leu Leu Val Ala Met Leu Pro Pro Arg Arg Cys  
 225 230 235 240  
 Phe Leu Ala Tyr Leu Leu Ile Gly Trp Gly Leu Pro Thr Val Cys Ile  
 245 250 255  
 Gly Ala Trp Thr Ala Ala Arg Leu Tyr Leu Glu Asp Thr Gly Cys Trp  
 260 265 270  
 Asp Thr Asn Asp His Ser Val Pro Trp Trp Val Ile Arg Ile Pro Ile  
 275 280 285  
 Leu Ile Ser Ile Ile Val Asn Phe Val Leu Phe Ile Ser Ile Ile Arg  
 290 295 300  
 Ile Leu Leu Gln Lys Leu Thr Ser Pro Asp Val Gly Gly Asn Asp Gln  
 305 310 315 320  
 Ser Gln Tyr Lys Arg Leu Ala Lys Ser Thr Leu Leu Leu Ile Pro Leu  
 325 330 335  
 Phe Gly Val His Tyr Met Val Phe Ala Val Phe Pro Ile Ser Ile Ser  
 340 345 350  
 Ser Lys Tyr Gln Ile Leu Phe Glu Leu Cys Leu Gly Ser Phe Gln Gly  
 355 360 365  
 Leu Val Val Ala Val Leu Tyr Cys Phe Leu Asn Ser Glu Val Gln Cys  
 370 375 380  
 Glu Leu Lys Arg Lys Trp Arg Ser Arg Cys Pro Thr Pro Ser Ala Ser  
 385 390 395 400

Arg Asp Tyr Arg Val Cys Gly Ser Ser Phe Ser His Asn Gly Ser Glu  
 405 410 415

Gly Ala Leu Gln Phe His Arg Ala Ser Arg Ala Gln Ser Phe Leu Gln  
 420 425 430

Thr Glu Thr Ser Val Ile  
 435

<210> 238  
 <211> 1750  
 <212> DNA  
 <213> Homo sapiens

<400> 238  
 gcggtcttat ataagccaga tccgcagggg agtccgcaga agggttaaac aggtctttgg 60  
 gcttcggcga cctcgcccg cgcagaaacc ggtaagaaga cagtgggctg cgcgctctcat 120  
 tttcagcctt gcccgactc tcccaaagcc ggcgcccagt agtggctcca gagccacag 180  
 gtggcccccg gcagtctctg gggcgcatgg agcggcggtta atagggctgg cggcgccaggc 240  
 cagtagccgc tccaacatga acctcgctggg cagctacgca caccatcacc accatcacca 300  
 ccgcaccct gcgcacccca tgcctcacga acccttctc ttcggtccgg cctcgcgctg 360  
 tcatcaggaa aggcctact tccagagctg gctgctgagc ccggtgacg ctgccccgga 420  
 cttccctgcg ggcgggcccgc cgcccgccgc cgctgcagcc gccaccgcct atggctctga 480  
 cgccaggcct gggcagagcc ccgggcggtt ggaggcgctt ggcgccgctc ttggccggcg 540  
 gaaaggctca ggaccaaga aggagcggag acgcactgag agcattaaca gcgcattcgc 600  
 ggagttgcgc gagtgcattc ccaacgtgcc ggccgacacc aagctctcca agatcaagac 660  
 tctgcgccta gccaccagct acatcgcta cctgatggac gtgctggcca aggatgcaca 720  
 gtctggcgat cccgaggcct tcaaggctga actcaagaag gcggatggcg gccgtgagag 780  
 caagcggaaa agggagctgc agcagcacga aggttttctt cctgccctgg gccagtcga 840  
 gaagaggatt aaaggacgca ccggttgcc gcagcaagtc tggcgctgg agttaaacca 900  
 gtgagccgag gcccgcccg aggacctggc caggccagcc actcctgaag ccccgaggag 960  
 agaggaaggc agcggcgaac gccaggctct gggtccggc gactggtgct acgcatcccg 1020  
 cggagcttct gctgagcgc ggaggtcgt cggtgcaac cacacacttg gatcgcacgt 1080  
 gcaatgtcct ttgatttttt ttaatacatt aagagaaaga gaaatatata tatatccacc 1140

```

cccagcccaa ccgagggcgg cccttggcgg caacatgcaa gaaggaggga ctgtcgaacc 1200
caagggctca aagacgcact ctccaccct tttggagcga atttagaacc tcagccctat 1260
ctccatttcc ctatctggct ctttctctct tgccctcca tatgatccgc cccgacgccg 1320
tcttctctaa ttaaaatgca ataaggaatc aattcttttc ttgcctgaga aagagaacca 1380
gacgcaggaa gatgaaaggc tgccctttgt tcttcgaatc gtggtggttt tattttattt 1440
ttctttttgt cgctgcactt cctgtttagt tccaaggga acactttctc tctttctctg 1500
tctctctctt ttcttccttc ttttccttcc tttttgttcc tatctaaata aaagctttcc 1560
ctgtgttgga aagtttttat gtatttaaac tacctaccat gcctgttggtg ctcaggtggt 1620
tgttcatcct gccatcccca acccttttct acctcaagtc tgtgtgacca ctcacagccc 1680
ccctcccttc gccaaagcag tgtctatgct cttgattaat aaaacatttt ctgaaatcaa 1740
aaaaaaaaa 1750

```

```

<210> 239
<211> 215
<212> PRT
<213> Homo sapiens

```

```

<400> 239

```

```

Met Asn Leu Val Gly Ser Tyr Ala His His His His His His Pro
1          5          10          15

```

```

His Pro Ala His Pro Met Leu His Glu Pro Phe Leu Phe Gly Pro Ala
20          25          30

```

```

Ser Arg Cys His Gln Glu Arg Pro Tyr Phe Gln Ser Trp Leu Leu Ser
35          40          45

```

```

Pro Ala Asp Ala Ala Pro Asp Phe Pro Ala Gly Gly Pro Pro Pro Ala
50          55          60

```

```

Ala Ala Ala Ala Ala Thr Ala Tyr Gly Pro Asp Ala Arg Pro Gly Gln
65          70          75          80

```

```

Ser Pro Gly Arg Leu Glu Ala Leu Gly Gly Arg Leu Gly Arg Arg Lys
85          90          95

```

```

Gly Ser Gly Pro Lys Lys Glu Arg Arg Arg Thr Glu Ser Ile Asn Ser
100          105          110

```

Ala Phe Ala Glu Leu Arg Glu Cys Ile Pro Asn Val Pro Ala Asp Thr  
 115 120 125

Lys Leu Ser Lys Ile Lys Thr Leu Arg Leu Ala Thr Ser Tyr Ile Ala  
 130 135 140

Tyr Leu Met Asp Val Leu Ala Lys Asp Ala Gln Ser Gly Asp Pro Glu  
 145 150 155 160

Ala Phe Lys Ala Glu Leu Lys Lys Ala Asp Gly Gly Arg Glu Ser Lys  
 165 170 175

Arg Lys Arg Glu Leu Gln Gln His Glu Gly Phe Pro Pro Ala Leu Gly  
 180 185 190

Pro Val Glu Lys Arg Ile Lys Gly Arg Thr Gly Trp Pro Gln Gln Val  
 195 200 205

Trp Ala Leu Glu Leu Asn Gln  
 210 215

<210> 240  
 <211> 489  
 <212> DNA  
 <213> Homo sapiens

<400> 240  
 tttccctact cattagctgg ccccttttat gaccaatgac tcataaggca agatgtgtgg 60  
 tggcatcttc ggacaggcgg caggctttaa tagggcagcc tgggttggtg gaggcaagca 120  
 aagctaattg gcatgcgtgg gaatcaaacc ccaggccctg ggctcattag cccatgggtca 180  
 aaacaactga gccagaggag gtaataatTTT gcccaagaat atcagtagtt cctttattag 240  
 aagaaaatgg ctgatatgga agttggggaa tctgaattgc cagagaatct tgggaagagt 300  
 aataagctct tagtctcaac aaaaagtgtt ttttcatctc agcgcgtaaa gggtgctata 360  
 tgggaacaaa gaagtatttt aaaattataa ctactcattc tttcttttagc cttagttaat 420  
 ttgagcagaa gccacaacaa gcaaaccaca ataaatttag aattggcaga aatccacatt 480  
 aactcctct 489

<210> 241  
 <211> 47



<212> PRT  
 <213> Homo sapiens

<400> 241

Met Ala Asp Met Glu Val Gly Glu Ser Glu Leu Pro Glu Asn Leu Gly  
 1 5 10 15

Lys Ser Asn Lys Leu Leu Val Ser Thr Lys Ser Val Phe Ser Ser Gln  
 20 25 30

Arg Val Lys Gly Ala Ile Trp Glu Gln Arg Ser Ile Leu Lys Leu  
 35 40 45

<210> 242  
 <211> 2487  
 <212> DNA  
 <213> Homo sapiens

<400> 242

agtttctctt cgttttgttt ttcttttatt tttcttgctc ctctttctac aactgaagt 60  
 tgctgttggt ttacatttac cttttattta tttgtagttt ttgaggcagg ttggagtgtta 120  
 agaatgcaat ctcggttac agccgcctcg actttccagg actccctcag gtgatcttcc 180  
 tatctcagcc ttccaagtgg ctgagactac aggaatcact taattctgtg atgtcgaagc 240  
 tgaagtgagc cgtgatgatg ccttgccctc cagtctgagt gtttcagaag gtggagtttc 300  
 gctcttattg ccagggtgg agttcagtgg cgtgacctca gctcaccgca acctctgccg 360  
 cctgtgttca agagattttc cagtcttcac cctttcgagt agctgaaacc acaggcaaac 420  
 acctccaggc ctggctaatt tttttttttt catagagact aggtagctcc ataatggtca 480  
 ggctggtcta gaacacccga cctgaggcgt accaccaac ttgaccaccc aaagtgtga 540  
 gattaaaggc gtgagctccg cgtctggcca taacatctta tcctatagaa gccagagag 600  
 gttaggcgac atctcacgtg tcgaggtgat ctcgaaactt taggctccag agatcctccc 660  
 gcatcggcct cccggagtgc tgtgatgaca cgcgtgggca cgacggagtt tcaactctgt 720  
 cgcccagggt ggagtacgat ggcggctctc ggctcaccgc acctccgcc tcccaggttc 780  
 aagtgattct cctgcctcag cttccccgag tagctggaat gacagagatg agccatcgtg 840  
 cccggctaatt ttttctattt ttagtacaga tgggggtttct ccatcttgggt catgctggtc 900  
 ttcaacttcc gaccgttgga gaatcttaac tttcttggtg gtggttgttt tcctttttct 960  
 ttttttttct ttttttttct ttccttctcc tcccccccc acccccttgg tcgtcgtcct 1020

```

cctcctcctc ctctcctcc tctcctcct cctcctcctc ctctcctcc tctttcattt 1080
ctttcagctg ggctctccta cttgtgttg tctgttgctc acgctggtct caaactcctg 1140
gccttgacgc ttctccgctc acatccgccg tctggttggt gaaatgagca tctctcgtaa 1200
aatggaaaag atgaaagaaa taaacacgaa gacggaaagc acggtgtgaa cgtttctctt 1260
gccgtctccc ggggtgtacc ttggaccggg aaacacggag ggagcttggc tgagtgggtt 1320
ttcgggtgcc aaacctccc agggcctcct tccctctccc ccttgtcccc gcttctcccc 1380
cagccgaggc tcccaccgcc gccctggcat tttccatagg agaggtatgg gagaggactg 1440
acacgccttc cagatctata tctgcccga cgtctctggc tcggcgtgcc ccaccggcta 1500
cctgctacct tccagggagc tctgaggcgg atgcgacccc ccccccccg tcacgtcccc 1560
ctacctccc ccggtggcc tttgccggc gaccccagg gaaccgcgtt gatgctgcct 1620
tcggatcctc cggcgaagac ttccaccgga tgccccgggt gggccggtt ggatcagact 1680
ggaccacccc ggaccgtgct gttcttggg cacacagatg agacgcacga gagggagaaa 1740
cagctcaata gataccgctg accttcattt gtggaatcct cagtcacga cacacaagac 1800
agacggagtc tcgctctggg cggggcgagg cgaggcgagg cacagcgcat cgctttggaa 1860
gccgcggcaa cgcctttcaa agccccattc gtatgcacag agccttattc ccttctgga 1920
gttggaagctg atgccttcc tagccttggg cttctctcca ttcggaagct ttgacaggcg 1980
caacccccacc cagaggctgg ctgcggtga ggattaggg gctgcggtgc ggtggcgctc 2040
tctcggctca ctgagacctc tgcttcccg gttccagtga ttcttcttc gtagctggga 2100
ttacaggcgc acaccatgac ggccggtca tattcctatt ttacgtagag acgggggttc 2160
tccacgttgg ccacgctggt ctgaaactcc tgacctcaa tgatccgcct tctgggcct 2220
cccaaagtgc tggaaacgac aggcctgagc cgccgggatt tcagccttta aaagcgcggg 2280
ccctgccacc tttcgtgtg gcccttacgc tcagaatgac gtgtcctctc tgccgtaggt 2340
tgactccttg agtcccctag gccattgcac tgtagcctgg gcagcaagag ccaaactccg 2400
tccccccacc tcccgcgca cataataact aactaacaaa ctaactaact aactaaacta 2460
actaaataaa taaaatctct acacgtc 2487

```

```

<210> 243
<211> 99
<212> PRT
<213> Homo sapiens

```

&lt;400&gt; 243

Met Arg Arg Thr Arg Gly Arg Asn Ser Ser Ile Asp Thr Ala Asp Leu  
 1 5 10 15

His Leu Trp Asn Pro Gln Ser Ser Thr His Lys Thr Asp Gly Val Ser  
 20 25 30

Leu Trp Ala Gly Arg Gly Glu Ala Arg His Ser Ala Ser Leu Trp Lys  
 35 40 45

Pro Arg Gln Arg Leu Ser Lys Pro His Ser Tyr Ala Gln Ser Leu Ile  
 50 55 60

Pro Phe Leu Glu Leu Glu Leu Met Pro Ser Val Ala Leu Gly Phe Ser  
 65 70 75 80

Pro Phe Gly Ser Phe Asp Arg Arg Asn Pro Thr Gln Arg Leu Ala Ala  
 85 90 95

Ala Glu Asp

&lt;210&gt; 244

&lt;211&gt; 2114

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 244

aggaattccg gtggccggcc actcccgctct gctgtgacgc gcggacagag agctaccggt 60  
 ggacccacgg tgcctccctc cctgggatct acacagacca tggccttgca acggctcgac 120  
 ccctgttggt cctgtgggga ccgccctggc agcctcctgt tcctgctctt cagcctcgga 180  
 tgggtgcata ccgcgaggac cctggctgga gagacaggga cggagtctgc cccctgggg 240  
 ggagtctga caacccccca taacatttcc agcctctccc ctgccaaact ccttggcttc 300  
 ccgtgtgcgg aggtgtccgg cctgagcacg gagcgtgtcc gggagctggc tgtggccttg 360  
 gcacagaaga atgtcaagct ctcaacagag cagctgcgct gtctggctca ccggctctct 420  
 gagcccccg aggacctgga cgccctccca ttggacctgc tgctattcct caaccagat 480  
 gcgttctcgg gggcccaggc ctgcacccgt ttcttctccc gcatcacgaa ggccaatgtg 540  
 gacctgctcc cgaggggggc tcccagcga cagcggctgc tgctgcggc tctggcctgc 600

tggggtgtgc	gggggtctct	gctgagcgag	gctgatgtgc	gggctctggg	aggcctggct	660
tgcgacctgc	ctgggcgctt	tgtggccgag	tcggccgaag	tgctgctacc	ccggctgggtg	720
agctgcccg	gaccctgga	ccaggaccag	caggaggcag	ccagggcggc	tctgcagggc	780
gggggacccc	cctacggccc	cccgtcgaca	tggctctgtct	ccacgatgga	cgctctgcgg	840
ggcctgctgc	ccgtgctggg	ccagcccatc	atccgcagca	tcccgcaggg	catcgtggcc	900
gcgtggcggc	aacgctcctc	tcgggaccca	tcttggcggc	agcctgaacg	gaccatcctc	960
cggccgcggt	tccggcgga	agtggagaag	acagcctgtc	cttcaggcaa	gaaggcccgc	1020
gagatagacg	agagcctcat	cttctacaag	aagtgggagc	tggaagcctg	cgtggatgcg	1080
gccctgctgg	ccaccagat	ggaccgcgtg	aacgccatcc	ccttcaccta	cgagcagctg	1140
gacgtcctaa	agcataaact	ggatgagctc	taccacaag	gttacccca	gtctgtgatc	1200
cagcacctgg	gctacctctt	cctcaagatg	agccctgagg	acattcgcaa	gtggaatgtg	1260
acgtccctgg	agaccctgaa	ggctttgctt	gaagtcgaca	aagggcacga	aatgagtcct	1320
caggctcctc	ggcggcccc	cccacaggtg	gccaccctga	tcgaccgctt	tgtgaaggga	1380
aggggcccagc	tagacaaaga	caccctagac	accctgaccg	ccttctaccc	tgggtacctg	1440
tgctccctca	gccccgagga	gctgagctcc	gtgcccccca	gcagcatctg	ggcggtcagg	1500
ccccaggacc	tggacacgtg	tgacccaagg	cagctggacg	tcctctatcc	caaggcccgc	1560
cttgctttcc	agaacatgaa	cgggtccgaa	tacttcgtga	agatccagtc	cttctctgggt	1620
ggggccccca	cggaggatth	gaaggcgctc	agtcagcaga	atgtgagcat	ggacttggcc	1680
acgttcatga	agctgcggac	ggatgcgggtg	ctgccgttga	ctgtggctga	ggtgcagaaa	1740
cttctgggac	cccacgtgga	gggcctgaag	gcggaggagc	ggcaccgccc	ggtgcgggac	1800
tggatcctac	ggcagcgga	ggacgacctg	gacacgtgg	ggctggggct	acagggcggc	1860
atccccaacg	gctacctggt	cctagacctc	agcgtgcaag	agaccctctc	ggggacgccc	1920
tgctccttag	gacctggacc	tgttctcacc	gtcctggcac	tgctcctagc	ctccacctg	1980
gcctgagggc	ccaactccct	tgctggcccc	agccctgctg	gggatecccc	cctggccagg	2040
agcaggcacg	ggtgatcccc	gttccacccc	aagagaactc	gcgctcagta	aacgggaaca	2100
tgccccctgc	agac					2114

&lt;210&gt; 245

&lt;211&gt; 628

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 245

Met Ala Leu Gln Arg Leu Asp Pro Cys Trp Ser Cys Gly Asp Arg Pro  
 1 5 10 15

Gly Ser Leu Leu Phe Leu Leu Phe Ser Leu Gly Trp Val His Pro Ala  
 20 25 30

Arg Thr Leu Ala Gly Glu Thr Gly Thr Glu Ser Ala Pro Leu Gly Gly  
 35 40 45

Val Leu Thr Thr Pro His Asn Ile Ser Ser Leu Ser Pro Arg Gln Leu  
 50 55 60

Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg Val  
 65 70 75 80

Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser Thr  
 85 90 95

Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu Asp  
 100 105 110

Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp Ala  
 115 120 125

Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg Ile Thr Lys  
 130 135 140

Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg Leu  
 145 150 155 160

Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu Ser  
 165 170 175

Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro Gly  
 180 185 190

Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val Ser  
 195 200 205

Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala Ala  
 210 215 220  
 Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser Val  
 225 230 235 240  
 Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln Pro  
 245 250 255  
 Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln Arg  
 260 265 270  
 Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu Arg  
 275 280 285  
 Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly Lys  
 290 295 300  
 Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu  
 305 310 315 320  
 Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg  
 325 330 335  
 Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His  
 340 345 350  
 Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile Gln  
 355 360 365  
 His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg Lys  
 370 375 380  
 Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val Asp  
 385 390 395 400  
 Lys Gly His Glu Met Ser Pro Gln Ala Pro Arg Arg Pro Leu Pro Gln  
 405 410 415  
 Val Ala Thr Leu Ile Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp  
 420 425 430

Lys Asp Thr Leu Asp Thr Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys  
 435 440 445  
 Ser Leu Ser Pro Glu Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp  
 450 455 460  
 Ala Val Arg Pro Gln Asp Leu Asp Thr Cys Asp Pro Arg Gln Leu Asp  
 465 470 475 480  
 Val Leu Tyr Pro Lys Ala Arg Leu Ala Phe Gln Asn Met Asn Gly Ser  
 485 490 495  
 Glu Tyr Phe Val Lys Ile Gln Ser Phe Leu Gly Gly Ala Pro Thr Glu  
 500 505 510  
 Asp Leu Lys Ala Leu Ser Gln Gln Asn Val Ser Met Asp Leu Ala Thr  
 515 520 525  
 Phe Met Lys Leu Arg Thr Asp Ala Val Leu Pro Leu Thr Val Ala Glu  
 530 535 540  
 Val Gln Lys Leu Leu Gly Pro His Val Glu Gly Leu Lys Ala Glu Glu  
 545 550 555 560  
 Arg His Arg Pro Val Arg Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp  
 565 570 575  
 Leu Asp Thr Leu Gly Leu Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr  
 580 585 590  
 Leu Val Leu Asp Leu Ser Val Gln Glu Thr Leu Ser Gly Thr Pro Cys  
 595 600 605  
 Leu Leu Gly Pro Gly Pro Val Leu Thr Val Leu Ala Leu Leu Leu Ala  
 610 615 620  
 Ser Thr Leu Ala  
 625

<210> 246  
 <211> 537  
 <212> DNA  
 <213> Homo sapiens

<400> 246  
 tttatttcat tattcattcc atttattttt tattctttcta atttttcttt ctccaagtc 60  
 catattttac atccatccat ctaatcatat ttattgagtc attattaagc acaaagttct 120  
 atggatggca cgggaaaacc cagtgatcaa tgcgatggag tccttccac aggagcctac 180  
 aatctcaagc aaagttcaga attaattagt ggtaaatctt tactgacttc ataaaacgta 240  
 tcaagcacag tgcagagcac ttgacactca ttatcacatt taattttaag ctacctatga 300  
 ggtggacggt cttttacaga agaggaatct gtagctcaat aaagctgagt actttatcta 360  
 ggctggatcc aaaccaggc agcctgactc ccaaacctg catgcatgct tacatcacac 420  
 cccaggcccc tcagctctgt gagccctcct gacttcgatt cctcctctgc ttgactctt 480  
 ttaacattag tcactttaac aagaactcta atctatacaa ttcaagacgt tacactg 537

<210> 247  
 <211> 51  
 <212> PRT  
 <213> Homo sapiens

<400> 247

Met Arg Trp Thr Phe Phe Tyr Arg Arg Gly Ile Cys Ser Ser Ile Lys  
 1 5 10 15

Leu Ser Thr Leu Ser Arg Leu Asp Pro Asn Pro Gly Ser Leu Thr Pro  
 20 25 30

Lys Pro Cys Met His Val Tyr Ile Thr Pro Gln Ala Pro Gln Leu Cys  
 35 40 45

Glu Pro Ser  
 50

<210> 248  
 <211> 414  
 <212> DNA  
 <213> Homo sapiens

<400> 248  
 tttttttttt ggggacagga atttgacttt tattctttcc catattccca gtgcctgaca 60  
 gatggaaggt acctaataga tttttgtaga atggctgaat gagggtgcaa gacaccataa 120  
 tgccttccaa ttatctttct ttgacctgc tattttcatt ttaaagtggc agatggatgg 180  
 ggacacagta ggaattatct agattatggc catcagccac tttcaataat cttttggttc 240



ttgttctaatt tcattaaatt gctgtgcagc caacttgaat tacacagcaa gacacagcaa 300  
 agagaatcag aagccaattc ttctaacacg tatctcttct taaacaagga aattccacac 360  
 agcaccatit cttaggcaag gcagataacc cctacatatt tggtttttct ttaa 414

<210> 249  
 <211> 21  
 <212> PRT  
 <213> Homo sapiens

<400> 249

Met Arg Val Gln Asp Thr Ile Met Pro Ser Asn Tyr Leu Ser Phe Ala  
 1 5 10 15

Leu Leu Phe Ser Phe  
 20

<210> 250  
 <211> 1584  
 <212> DNA  
 <213> Homo sapiens

<400> 250

actctgggcg aggccgcccc tatcccagcc gcaccgggtcc ttcccggcac acgcgaggct 60  
 cccatggctc tggcgggtggc cccgtggggg cgacagtggg aagaggcccg cgccctgggc 120  
 cgggcagtca ggatgctgca ggcctagaa gagcaatgag tcgacccccg gctgtccgtg 180  
 agtccccctt cgctgcggga cctgctgccc cgacacagcg agctgcttcg agagggtggc 240  
 cattctcggc gggcggcggc cggaggcggc cccgggggtc ccggcggctc tggggacttt 300  
 ctactcatct acctggccaa tctggaggcc aagagcaggc aggtggccgc gctgctgcct 360  
 ccccgggggc gaaggagtgc caacgacgag ctcttcggg cgggctccag actcaggcga 420  
 cagctggcca agctggccat catcttcagc cacatgcacg cagagctgca cgcactcttc 480  
 cccgggggaa agtactgtgg acacatgtac cagctcacca aggccccgc ccacaccttc 540  
 tggagggaaa gttgcggagc ccggtgtgtg ctgccctggg ctgagtttga gtccctcctg 600  
 ggcacctgcc accctgtgga accaggctgc acagccctgg ccttgccgcac caccattgac 660  
 ctcacctgca gcgggcacgt gtccatcttc gaggtcgacg tcttcaccag gctctttcag 720  
 ccatggccaa cactcctcaa gaactggcag ctcttgccag tcaaccacc aggctacatg 780  
 gccttcctca cctatgatga ggtccaagag cgtctgcagg cctgcaggga caagccaggc 840

```

agttacatct tccggcccag ctgtactcgc ctggggcagt gggccatcgg ctatgtgagc 900
tcagatggca gcatactgca gaccatccct gccacaac cctgtccca ggtgctcctg 960
gaggacaga aggacggctt ctacctctac ccagatggaa agaccacaa cccagacctg 1020
actgagctcg gccaggcaga accccagcag cgcattccag tgtcagagga gcagctgcag 1080
ctctactggg ccatggactc cacatttgag ctctgcaaga tctgtgctga gagcaacaag 1140
gatgtgaaga ttgagccgtg cgggcacctg ctctgcagct gctgcctggc tgcctggcag 1200
cactcggaca gccagacctg ccccttctgc cgtgcgaga tcaagggtg ggaggccgtg 1260
agtatctacc agttctacgg tcaggctact gctgaggact cagggaacag cagtgaccag 1320
gaaggcaggg agttggagct ggggcaggtg cccctttcgg ctctccatt gccccacgg 1380
ccagatctgc ccccaggaa gccagaaat gccagccga aagtgagact cctaaaggg 1440
aactcccctc cagctgcgtt gggaccccag gaccctgcc cggcctgaag gccagggcac 1500
ccagatgtgc tgctcaaggg agcccgaagg gctggaaggg ggttgtgaaa ccgaaataaa 1560
ctgccaagcc tggctgtgcc acca 1584

```

<210> 251  
 <211> 474  
 <212> PRT  
 <213> Homo sapiens

<400> 251

```

Met Ala Leu Ala Val Ala Pro Trp Gly Arg Gln Trp Glu Glu Ala Arg
1           5           10           15

```

```

Ala Leu Gly Arg Ala Val Arg Met Leu Gln Arg Leu Glu Glu Gln Cys
20           25           30

```

```

Val Asp Pro Arg Leu Ser Val Ser Pro Pro Ser Leu Arg Asp Leu Leu
35           40           45

```

```

Pro Arg Thr Ala Gln Leu Leu Arg Glu Val Ala His Ser Arg Arg Ala
50           55           60

```

```

Ala Gly Gly Gly Gly Pro Gly Gly Pro Gly Gly Ser Gly Asp Phe Leu
65           70           75           80

```

```

Leu Ile Tyr Leu Ala Asn Leu Glu Ala Lys Ser Arg Gln Val Ala Ala
85           90           95

```

Leu Leu Pro Pro Arg Gly Arg Arg Ser Ala Asn Asp Glu Leu Phe Arg  
 100 105 110  
 Ala Gly Ser Arg Leu Arg Arg Gln Leu Ala Lys Leu Ala Ile Ile Phe  
 115 120 125  
 Ser His Met His Ala Glu Leu His Ala Leu Phe Pro Gly Gly Lys Tyr  
 130 135 140  
 Cys Gly His Met Tyr Gln Leu Thr Lys Ala Pro Ala His Thr Phe Trp  
 145 150 155 160  
 Arg Glu Ser Cys Gly Ala Arg Cys Val Leu Pro Trp Ala Glu Phe Glu  
 165 170 175  
 Ser Leu Leu Gly Thr Cys His Pro Val Glu Pro Gly Cys Thr Ala Leu  
 180 185 190  
 Ala Leu Arg Thr Thr Ile Asp Leu Thr Cys Ser Gly His Val Ser Ile  
 195 200 205  
 Phe Glu Phe Asp Val Phe Thr Arg Leu Phe Gln Pro Trp Pro Thr Leu  
 210 215 220  
 Leu Lys Asn Trp Gln Leu Leu Ala Val Asn His Pro Gly Tyr Met Ala  
 225 230 235 240  
 Phe Leu Thr Tyr Asp Glu Val Gln Glu Arg Leu Gln Ala Cys Arg Asp  
 245 250 255  
 Lys Pro Gly Ser Tyr Ile Phe Arg Pro Ser Cys Thr Arg Leu Gly Gln  
 260 265 270  
 Trp Ala Ile Gly Tyr Val Ser Ser Asp Gly Ser Ile Leu Gln Thr Ile  
 275 280 285  
 Pro Ala Asn Lys Pro Leu Ser Gln Val Leu Leu Glu Gly Gln Lys Asp  
 290 295 300  
 Gly Phe Tyr Leu Tyr Pro Asp Gly Lys Thr His Asn Pro Asp Leu Thr  
 305 310 315 320

Glu Leu Gly Gln Ala Glu Pro Gln Gln Arg Ile His Val Ser Glu Glu  
325 330 335

Gln Leu Gln Leu Tyr Trp Ala Met Asp Ser Thr Phe Glu Leu Cys Lys  
340 345 350

Ile Cys Ala Glu Ser Asn Lys Asp Val Lys Ile Glu Pro Cys Gly His  
355 360 365

Leu Leu Cys Ser Cys Cys Leu Ala Ala Trp Gln His Ser Asp Ser Gln  
370 375 380

Thr Cys Pro Phe Cys Arg Cys Glu Ile Lys Gly Trp Glu Ala Val Ser  
385 390 395 400

Ile Tyr Gln Phe Tyr Gly Gln Ala Thr Ala Glu Asp Ser Gly Asn Ser  
405 410 415

Ser Asp Gln Glu Gly Arg Glu Leu Glu Leu Gly Gln Val Pro Leu Ser  
420 425 430

Ala Pro Pro Leu Pro Pro Arg Pro Asp Leu Pro Pro Arg Lys Pro Arg  
435 440 445

Asn Ala Gln Pro Lys Val Arg Leu Leu Lys Gly Asn Ser Pro Pro Ala  
450 455 460

Ala Leu Gly Pro Gln Asp Pro Ala Pro Ala  
465 470

<210> 252  
<211> 454  
<212> DNA  
<213> Homo sapiens

<400> 252  
tttgtttcca gaggcaagtt tattcatgca ccttttaacg aatcaatggt gttctggttg 60  
aatcatgggc atagagagtc agcaacaaca attcggtagg tggtgtgcca acgttggggc 120  
actttactga gaggcaccgt gggttccaga gaaagtcttc tagctgggggt cctcctgagg 180  
acaaccctgc tcccatttgg cctggatttg gggtccttc ctccctcatg gtccatttag 240  
gccatgttgt gtgtcagtag gacctacacg tgaactccag aggaaaggcc tgcccgggat 300

```

gttgctgttg ttctgataca gaaacaattg gatgccctta aacgcacatg ccttcccatg 360
taatgtcttg gcaaagtgga aatgagcact cagaattgtc gctggcagga gtgctgctgg 420
gttcgcgttt ctttatgcaa tgtgccatca gtca 454

```

```

<210> 253
<211> 37
<212> PRT
<213> Homo sapiens

```

```

<400> 253

```

```

Met Val His Leu Gly His Val Val Cys Gln Tyr Asp Leu His Val Asn
1      5      10      15

```

```

Ser Arg Gly Lys Ala Cys Pro Gly Cys Cys Cys Cys Ser Asp Thr Glu
      20      25      30

```

```

Thr Ile Gly Cys Pro
      35

```

```

<210> 254
<211> 588
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (405)..(405)
<223> n = unknown

```

```

<220>
<221> misc_feature
<222> (564)..(564)
<223> n = unknown

```

```

<400> 254
tttttttttt tttttttttt tttttttttt tttttttttt tttttttccc 60
attaaccttt ttaagggggc ccaaaaattc ggggccaaat ttggggccag ggggttccca 120
taaaaaagcc cgtttttaaa aacctaaaac ctaaaaccgg cccccccaa aaaaaaaccc 180
caagggggcc cccaaaacat tccccttccc ttgggagggg ttaccgaggc ttggttatca 240
taaccagcc ttttccccca aaactaaagg ggccaatgga aacaaacggt ttggaacccg 300
tcctcccccc ccggataaaa aggggggggg ggggttttgg ggaaaaaatt cattaaccct 360

```

tctgaccttt tggggcaaac tgggggccct ggccagcccc agaanccttt tgggccacgg 420  
 tttggaggac cccaccogaa acggttggtt taatataccg aacaagaaag cgccccaagg 480  
 ggggatggtt ggagaagctc tcaacacaca gggcctggcc aggaccata tcacaagggg 540  
 agtattcccc agcttaaaaa attnggggcc tttttccgct ttttacca 588

<210> 255  
 <211> 75  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> MISC\_FEATURE  
 <222> (15)..(15)  
 <223> X = unknown

<220>  
 <221> MISC\_FEATURE  
 <222> (68)..(68)  
 <223> X = unknown

<400> 255

Leu Thr Phe Trp Gly Lys Leu Gly Ala Leu Ala Ser Pro Arg Xaa Leu  
 1 5 10 15

Leu Gly His Gly Leu Glu Asp Pro Thr Arg Asn Gly Trp Phe Asn Ile  
 20 25 30

Pro Asn Lys Lys Ala Pro Gln Gly Gly Met Val Gly Glu Ala Leu Asn  
 35 40 45

Thr Gln Gly Leu Ala Arg Thr His Ile Thr Arg Gly Val Phe Pro Ser  
 50 55 60

Leu Lys Asn Xaa Gly Pro Phe Ser Ala Phe Tyr  
 65 70 75

<210> 256  
 <211> 996  
 <212> DNA  
 <213> Homo sapiens

<400> 256  
 ggcacgaggc tcagtgtga aggctgtgcg gacactgggg gcccgccagg ggtttggccc 60

```

cttactcaac ccaaccacgg tcctctccgg cgcaggccga tttgaggacc tagactcctt 120
gatgctgacg gcctgagggg gctcccgggt gccggatata tgacacaggc cagggaggct 180
cccctgggag acctggcagg cctggagggt tgagtcggct ctgagcagct gctctgggag 240
agccagtcca cggagccaaa gctggagggc agctgccggc cacaagttgg ggaggaggag 300
agacgcaagg ccgtcagatg cttgtcctgg aaaccaacca tgagctgtga tgaaatccag 360
gcaactgagt tgtgtttcag cccaaagcag caaatggaat ccagcttcag gaccatcatc 420
tgacataggg gaagaagact tacatagaag gcctaaccag cacccaagat catgctcata 480
gggtggaggag acttgctttg tctcagatga gactttggac tgtggacttt tgagttaatg 540
ctgaaatgag ttgagacttt ggggaactgt tgggaaggca tgattggttt taaatatgaa 600
tatatgagat ttgggagggg gtcaggggtg gaatgatatg gtttggctct gtgtccccac 660
ccaaatctca tcttgtagct ccataaatcc tcccatgttg tgggagggac ccagtgggag 720
atgattgaat catgagggcg ggtctttctc atgctgttca tgatccatt catgtgagaa 780
agacccatgt gatcatgaat gggcttcaca agatctgatg gtgttaaaaa tgggagtttc 840
tctgcacaag ctctctgcct gctgccattc acaaaggatg tgacttgctt ctctctgcct 900
tctgctatga ttgtgaggcc tccctagcca tgtggaactg tgagtccaat taaacctctt 960
tcttttgtaa attgaaaaaa aaaaaaaaaa aaaaaa 996

```

<210> 257  
 <211> 42  
 <212> PRT  
 <213> Homo sapiens

<400> 257

```

Met Gly Leu Thr Arg Ser Asp Gly Val Lys Asn Gly Ser Phe Ser Ala
1           5           10           15

```

```

Gln Ala Leu Cys Leu Leu Pro Phe Thr Lys Asp Val Thr Cys Phe Ser
          20           25           30

```

```

Leu Pro Ser Ala Met Ile Val Arg Pro Pro
          35           40

```

<210> 258  
 <211> 560  
 <212> DNA  
 <213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (537)..(537)

&lt;223&gt; n = unknown

&lt;400&gt; 258

```

tggtaccatt ctggtgtatt tttcttgga tttttatatt gaatcaaata ttgtaaattg      60
tgtataaatg aagatgctga atagttctgt ttccacttgg catttcaagt ctgatatcag      120
gtgtctgtac agggttttga tttctttccc ttgtataact acacaacaat cctacagtgt      180
aacatatgga atcattttga atagacttgt gtgctataag ctttcagcag gtcctctgtc      240
tctagaataa gcatgttggt tattttcaga taatcagaaa taagtgtgct gacaagctgg      300
acacaatctg ggtgtgccca gcttaccttt ctttctgatg tttaaattga aggctgcagc      360
caatggaata tggtcagctg gttttccttg gcttcctaga ttaaaaaaaaa ataataaagc      420
atagttcttt attaaactta ggatattggt cataaaataa ataaaggccc ctgcactaac      480
atgacaacat gcctcatggg caccctctct atatgtactt actcattaaa gtgtatntta      540
tttccttatg tggaaagcac                                         560

```

&lt;210&gt; 259

&lt;211&gt; 60

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 259

```

Met Lys Met Leu Asn Ser Ser Val Ser Thr Trp His Phe Lys Ser Asp
1           5           10           15

Ile Arg Cys Leu Tyr Arg Val Leu Ile Ser Phe Pro Cys Ile Thr Thr
          20           25           30

Gln Gln Ser Tyr Ser Val Thr Tyr Gly Ile Ile Leu Asn Arg Leu Val
          35           40           45

Cys Tyr Lys Leu Ser Ala Gly Pro Leu Ser Leu Glu
          50           55           60

```

&lt;210&gt; 260

&lt;211&gt; 4834

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens



<400> 260  
 ttctttacta accctacaaa aaacctagt tctataacta aagatttctga actgcccacc 60  
 tgcagctgtc ttgatcgagt tatacaaaaa gacaaaggcc catattatac acaccttggg 120  
 gcaggaccaa gtgttgctgc tgtcagggaa atcatggaga ataggtatgg tcaaaaagga 180  
 aacgcaataa ggatagaaat agtagtgtac accggtaaag aagggaagaa ctctcatggg 240  
 tgtccaattg ctaagtgggt tttagaaga agcagtgtatg aagaaaaagt tctttgtttg 300  
 gtccggcagc gtacaggcca ccaactgtcca actgctgtga tgggtgtgct catcatgggtg 360  
 tgggatggca tccctcttcc aatggccgac cggctataca cagagctcac agagaatcta 420  
 aagtcataca atgggcaccc taccgacaga agatgcaccc tcaatgaaaa tcgtacctgt 480  
 acatgtcaag gaattgatcc agagacttgt ggagcttcat tctcttttgg ctgttcatgg 540  
 agtatgtact ttaatggctg taagtttgggt agaagcccaa gcccagaag atttagaatt 600  
 gatccaagct ctcccttaca tgaaaaaac cttgaagata acttacagag tttggctaca 660  
 cgattagctc caatttataa gcagtatgct ccagtagctt accaaaatca ggtggaatat 720  
 gaaaatgttg cccgagaatg tcggcttggc agcaagggaag gtctgtccctt ctctggggtc 780  
 actgcttgcc tggacttctg tgctcatccc cacagggaca ttcacaacat gaataatgga 840  
 agcactgtgg tttgtacctt aactcgagaa gataaccgct ctttgggtgt tattcctcaa 900  
 gatgagcagc tccatgtgct acctctttat aagctttcag acacagatga gtttggctcc 960  
 aaggaaggaa tggaagccaa gatcaaatct ggggccatcg aggtcctggc acccgccgc 1020  
 aaaaaagaa cgtgtttcac tcagcctgtt ccccgttctg gaaagaagag ggctgcatg 1080  
 atgacagagg ttcttgaca taagataagg gcagtggaaa agaaacctat tccccgaatc 1140  
 aagcggaaga ataactcaac aacaacaaac aacagtaagc cttcgtcact gccaacctta 1200  
 gggagtaaca ctgagaccgt gcaacctgaa gtaaaaagt aaaccgaacc ccattttatc 1260  
 ttaaaaagtt cagacaacac taaaacttat tcgctgatgc catccgctcc tcaccagtg 1320  
 aaagaggcat ctccaggctt ctctgggtcc ccgaagactg cttcagccac accagctcca 1380  
 ctgaagaatg acgcaacagc ctcatgcggg ttttcagaaa gaagcagcac tccccactgt 1440  
 acgatgcctt cggaagact cagtgggtgcc aatgcagctg ctgctgatgg ccctggcatt 1500  
 tcacagcttg gcgaagtggc tcctctcccc acctgtctg ctctgtgat ggagcccctc 1560  
 attaattctg agccttcac tgggtgtgact gagccgctaa cgcctcatca gccaaaccac 1620  
 cagccctcct tcctcacctc tcctcaagac cttgcctctt ctccaatgga agaagatgag 1680

cagcattctg aagcagatga gcctccatca gacgaacccc tatctgatga ccccctgtca	1740
cctgctgagg agaaattgcc ccacattgat gagtattggc cagacagtga gcacatcttt	1800
ttggatgcaa atattggtgg ggtggccatc gcacctgctc acggctcggg tttgattgag	1860
tgtgcccggc gagagctgca cgctaccact cctgttgagc accccaaccg taatcatcca	1920
acccgcctct cccttgtctt ttaccagcac aaaaaccta ataatgcccc acatggtttt	1980
gaactaaaca agattaagtt tgaggctaaa gaagctaaga ataagaaaat gaaggcctca	2040
gagcaaaaag accaggcagc taatgaaggc ccagaacagt cctctgaagt aaatgaattg	2100
aaccaaattc cttctcataa agcattaaca ttaacccatg acaatgttgt caccgtgtcc	2160
ccttatgctc tcacacacgt tgcggggccc tataaccatt gggctctgaag gcttttctcc	2220
ccctcttaat gcctttgcta gtgcagtgtg ttttttcaag gtgctgttaa aagaaagtca	2280
tgttgtcggt tactatcttc atctcaccca tttcaagtct gaggtaaaaa aataataatg	2340
ataacaaaac ggggtgggta ttcttaactg tgactatatt ttgacaattg gtagaagggtg	2400
cacattttaa gcaaaaataa aagttttata gttttaaata cataaagaaa tgtttcagtt	2460
aggcattaac cttgatagaa tcactcagtt tgggtgctta aattaagtct gtttactatg	2520
aaacaagagt catTTTTtaga ggattttaac aggttcatgt tctatgatgt aaaatcaaga	2580
cacacagtgt taactctaca cagcttctgg tgcttaacca catccacaca gttaaaaata	2640
agctgaatta ttatttcatg gtgccattgt tccaacatct tccaatcatt gctagaaaat	2700
tggcatattc ctttgaaata aacttatgaa atgttttctc tcttaaaata tttctcctgt	2760
gtaaaataaa tcattgttgt tagtaatggc tggaggctgt tcataaattg taaatatata	2820
ttttaaaagc actttctatt tttaaaagta acttgaaata atatagtata agaatcctat	2880
tgtctattgt ttgtgcatat ttgcatacaa gagaaatcat ttatccttgc tgtgtagagt	2940
tccatcttgt taactgcagt atgtattcta atcatgtata tggtttgtgt tcttttactg	3000
tgctctctca cattcaagta ttagcaactt gcagtatata aaatagttag ataagagaa	3060
gttggttaatt atctctaaaa ttggaattag gaagcatatc accaatactg attaacattc	3120
tctttggaac taggtaagag tggctctctc ttattgaaca acctcaattt agtttcatcc	3180
cacctttctc agtataatcc atgagagggtg tttccaaaag gagatgaggg aacaggatag	3240
gtttcagaag agtcaaagtc ttctaagtc tcaagggtgat aaaatacaaa aactaagtag	3300
acagatattt gtactgaagt ctgatacaga attagaaaaa aaaaattctt gttgaaatat	3360

```

tttgaaaaca aattccctac tatcatcaca tgcctcccca accccaagtc aaaaacaaga 3420
ggaatggtac tacaacatg gctttgtcca ttaagagcta attcatttgt ttatcttagc 3480
atactagatt tgggaaaatg ataactcatc ttttctgata attgcctatg ttctaggtaa 3540
caggaaaaca ggcattaagt ttattttagt cttcccattt tcttcctatt actttattga 3600
ctcattttat tgcaaaacaa aaaggattac ccaaacaaca tgtttcgaac aaggagaatt 3660
ttcaatgaaa tacttgattc tgttaaaatg cagaggtgct ataacattca aagtgtcaga 3720
ttccttgga gtatggaaaa cctaattggtg cttctccctt ggaaatgcc taggaagccc 3780
acaaccgcta acatttaca ttttggtgca aaagcaaaca gttccagcag gctctctaaa 3840
gaaaaactca ttgtaactta ttaataatat ctggtgcaaa gtatctgttt tgagcttttg 3900
actaatccaa gtaaaggaat atgaagggat tgtaaaaaac aaaatgtcca ttgatagacc 3960
atcgtgtaca agtagatttc tgcttgttga atatgtaaaa tagggtaatt cattgacttg 4020
ttttagtatt ttgtgtgcct aaggtttctt atatacatat aagtatataa ataagtgatt 4080
gtttattgct tcagctgctt caacaagata ttactagta ttagactatc aggaatacac 4140
ccttgcgaga ttatgtttta gatttttaggc cttagctccc actagaaatt atttcttcac 4200
cagatttaat ggataaagtt ttatggctct ttatgcatcc actcatctac tcattcttcg 4260
agtctacact tattgaatgc ctgcaaaatc taagtatcac ttttattttt ctttggatca 4320
ccacctatga catagtaaac ttgaagaata aaaactacco tcagaaatat ttttaaaaga 4380
agtagcaaat tatcttcagt ataatccatg gtaatgtatg cagtaattca aattgatctc 4440
tctctcaata ggtttcttaa caatctaaac ttgaaacatc aatgttaatt tttggaacta 4500
ttgggatttg tgacgcttgt tgcagtttac caaaacaagt atttgaaaat atatagtatc 4560
aactgaaatg tttccattcc gttgtttag ttaacatcat gaatggactt cttaagctga 4620
ttaccccact gtgggaacca aattggattc ctactttgtt ggactctctt tcttgatttt 4680
aacaatttac catcccattc tctgccctgt gatTTTTTTT aaaagcttat tcaatgttct 4740
gcagcattgt gattgtatgc tggctacact gcttttagaa tgctctttct catgaagcaa 4800
ggaaataaat ttgtttgaaa tgacattttc tctc 4834

```

```

<210> 261
<211> 735
<212> PRT
<213> Homo sapiens

```

&lt;400&gt; 261

Phe Phe Thr Asn Pro Thr Lys Asn Leu Val Ser Ile Thr Lys Asp Ser  
 1 5 10 15

Glu Leu Pro Thr Cys Ser Cys Leu Asp Arg Val Ile Gln Lys Asp Lys  
 20 25 30

Gly Pro Tyr Tyr Thr His Leu Gly Ala Gly Pro Ser Val Ala Ala Val  
 35 40 45

Arg Glu Ile Met Glu Asn Arg Tyr Gly Gln Lys Gly Asn Ala Ile Arg  
 50 55 60

Ile Glu Ile Val Val Tyr Thr Gly Lys Glu Gly Lys Ser Ser His Gly  
 65 70 75 80

Cys Pro Ile Ala Lys Trp Val Leu Arg Arg Ser Ser Asp Glu Glu Lys  
 85 90 95

Val Leu Cys Leu Val Arg Gln Arg Thr Gly His His Cys Pro Thr Ala  
 100 105 110

Val Met Val Val Leu Ile Met Val Trp Asp Gly Ile Pro Leu Pro Met  
 115 120 125

Ala Asp Arg Leu Tyr Thr Glu Leu Thr Glu Asn Leu Lys Ser Tyr Asn  
 130 135 140

Gly His Pro Thr Asp Arg Arg Cys Thr Leu Asn Glu Asn Arg Thr Cys  
 145 150 155 160

Thr Cys Gln Gly Ile Asp Pro Glu Thr Cys Gly Ala Ser Phe Ser Phe  
 165 170 175

Gly Cys Ser Trp Ser Met Tyr Phe Asn Gly Cys Lys Phe Gly Arg Ser  
 180 185 190

Pro Ser Pro Arg Arg Phe Arg Ile Asp Pro Ser Ser Pro Leu His Glu  
 195 200 205

Lys Asn Leu Glu Asp Asn Leu Gln Ser Leu Ala Thr Arg Leu Ala Pro  
 210 215 220

Ile Tyr Lys Gln Tyr Ala Pro Val Ala Tyr Gln Asn Gln Val Glu Tyr  
 225 230 235 240  
 Glu Asn Val Ala Arg Glu Cys Arg Leu Gly Ser Lys Glu Gly Arg Pro  
 245 250 255  
 Phe Ser Gly Val Thr Ala Cys Leu Asp Phe Cys Ala His Pro His Arg  
 260 265 270  
 Asp Ile His Asn Met Asn Asn Gly Ser Thr Val Val Cys Thr Leu Thr  
 275 280 285  
 Arg Glu Asp Asn Arg Ser Leu Gly Val Ile Pro Gln Asp Glu Gln Leu  
 290 295 300  
 His Val Leu Pro Leu Tyr Lys Leu Ser Asp Thr Asp Glu Phe Gly Ser  
 305 310 315 320  
 Lys Glu Gly Met Glu Ala Lys Ile Lys Ser Gly Ala Ile Glu Val Leu  
 325 330 335  
 Ala Pro Arg Arg Lys Lys Arg Thr Cys Phe Thr Gln Pro Val Pro Arg  
 340 345 350  
 Ser Gly Lys Lys Arg Ala Ala Met Met Thr Glu Val Leu Ala His Lys  
 355 360 365  
 Ile Arg Ala Val Glu Lys Lys Pro Ile Pro Arg Ile Lys Arg Lys Asn  
 370 375 380  
 Asn Ser Thr Thr Thr Asn Asn Ser Lys Pro Ser Ser Leu Pro Thr Leu  
 385 390 395 400  
 Gly Ser Asn Thr Glu Thr Val Gln Pro Glu Val Lys Ser Glu Thr Glu  
 405 410 415  
 Pro His Phe Ile Leu Lys Ser Ser Asp Asn Thr Lys Thr Tyr Ser Leu  
 420 425 430  
 Met Pro Ser Ala Pro His Pro Val Lys Glu Ala Ser Pro Gly Phe Ser  
 435 440 445

Trp Ser Pro Lys Thr Ala Ser Ala Thr Pro Ala Pro Leu Lys Asn Asp  
 450 455 460

Ala Thr Ala Ser Cys Gly Phe Ser Glu Arg Ser Ser Thr Pro His Cys  
 465 470 475 480

Thr Met Pro Ser Gly Arg Leu Ser Gly Ala Asn Ala Ala Ala Ala Asp  
 485 490 495

Gly Pro Gly Ile Ser Gln Leu Gly Glu Val Ala Pro Leu Pro Thr Leu  
 500 505 510

Ser Ala Pro Val Met Glu Pro Leu Ile Asn Ser Glu Pro Ser Thr Gly  
 515 520 525

Val Thr Glu Pro Leu Thr Pro His Gln Pro Asn His Gln Pro Ser Phe  
 530 535 540

Leu Thr Ser Pro Gln Asp Leu Ala Ser Ser Pro Met Glu Glu Asp Glu  
 545 550 555 560

Gln His Ser Glu Ala Asp Glu Pro Pro Ser Asp Glu Pro Leu Ser Asp  
 565 570 575

Asp Pro Leu Ser Pro Ala Glu Glu Lys Leu Pro His Ile Asp Glu Tyr  
 580 585 590

Trp Ser Asp Ser Glu His Ile Phe Leu Asp Ala Asn Ile Gly Gly Val  
 595 600 605

Ala Ile Ala Pro Ala His Gly Ser Val Leu Ile Glu Cys Ala Arg Arg  
 610 615 620

Glu Leu His Ala Thr Thr Pro Val Glu His Pro Asn Arg Asn His Pro  
 625 630 635 640

Thr Arg Leu Ser Leu Val Phe Tyr Gln His Lys Asn Leu Asn Lys Pro  
 645 650 655

Gln His Gly Phe Glu Leu Asn Lys Ile Lys Phe Glu Ala Lys Glu Ala  
 660 665 670

Lys Asn Lys Lys Met Lys Ala Ser Glu Gln Lys Asp Gln Ala Ala Asn  
 675 680 685

Glu Gly Pro Glu Gln Ser Ser Glu Val Asn Glu Leu Asn Gln Ile Pro  
 690 695 700

Ser His Lys Ala Leu Thr Leu Thr His Asp Asn Val Val Thr Val Ser  
 705 710 715 720

Pro Tyr Ala Leu Thr His Val Ala Gly Pro Tyr Asn His Trp Val  
 725 730 735

<210> 262  
 <211> 1155  
 <212> DNA  
 <213> Homo sapiens

<400> 262  
 atggattgca gtaacggatc ggcagagtgt accggagaag gaggatcaaa agaggtggtg 60  
 gggacttttta aggctaaaga cctaatagtc acaccagcta ccatttttaa ggaaaaacca 120  
 gacccaata atctgggtttt tggaactgtg ttcacggatc atatgctgac ggtggagtgg 180  
 tcctcagagt ttggatggga gaaacctcat atcaagcctc ttcagaacct gtcattgcac 240  
 cctggctcat cagctttgca ctatgcagtg gaattatttg aaggattgaa ggcatttcga 300  
 ggagtagata ataaaattcg actgtttcag ccaaacctca acatggatag aatgtatcgc 360  
 tctgctgtga gggcaactct gccggtatth gacaaagaag agctcttaga gtgtattcaa 420  
 cagcttgtga aattggatca agaatgggtc ccatattcaa catctgctag tctgtatatt 480  
 cgtcctgcat tcattggaac tgagccttct cttggagtca agaagcctac caaagccctg 540  
 ctctttgtac tcttgagccc agtgggacct tatttttcaa gtggaacctt taatccagtg 600  
 tccctgtggg ccaatcccaa gtatgtaaga gcctggaaag gtggaactgg ggactgcaag 660  
 atgggagggga attacggctc atctcttttt gcccaatgtg aagacgtaga taatgggtgt 720  
 cagcaggtcc tgtggctcta tggcagagac catcagatca ctgaagtggg aactatgaat 780  
 ctttttcttt actggataaa tgaagatgga gaagaagaac tggcaactcc tccactagat 840  
 ggcattcattc ttccaggagt gacaaggcgg tgcatctctg acctggcaca tcagtggggg 900  
 gaatttaagg tgtcagagag atacctcacc atggatgact tgacaacagc cctggagggg 960  
 aacagagtga gagagatggt tagctctggt acagcctgtg ttgtttgccc agtttctgat 1020

atactgtaca aaggcgagac aatacacatt ccaactatgg agaatgggcc taagctggca 1080  
 agccgcatct tgagcaaatt aactgatatc cagtatggaa gagaagagag cgactggaca 1140  
 attgtgctat cctga 1155

<210> 263  
 <211> 384  
 <212> PRT  
 <213> Homo sapiens

<400> 263

Met Asp Cys Ser Asn Gly Ser Ala Glu Cys Thr Gly Glu Gly Gly Ser  
 1 5 10 15

Lys Glu Val Val Gly Thr Phe Lys Ala Lys Asp Leu Ile Val Thr Pro  
 20 25 30

Ala Thr Ile Leu Lys Glu Lys Pro Asp Pro Asn Asn Leu Val Phe Gly  
 35 40 45

Thr Val Phe Thr Asp His Met Leu Thr Val Glu Trp Ser Ser Glu Phe  
 50 55 60

Gly Trp Glu Lys Pro His Ile Lys Pro Leu Gln Asn Leu Ser Leu His  
 65 70 75 80

Pro Gly Ser Ser Ala Leu His Tyr Ala Val Glu Leu Phe Glu Gly Leu  
 85 90 95

Lys Ala Phe Arg Gly Val Asp Asn Lys Ile Arg Leu Phe Gln Pro Asn  
 100 105 110

Leu Asn Met Asp Arg Met Tyr Arg Ser Ala Val Arg Ala Thr Leu Pro  
 115 120 125

Val Phe Asp Lys Glu Glu Leu Leu Glu Cys Ile Gln Gln Leu Val Lys  
 130 135 140

Leu Asp Gln Glu Trp Val Pro Tyr Ser Thr Ser Ala Ser Leu Tyr Ile  
 145 150 155 160

Arg Pro Ala Phe Ile Gly Thr Glu Pro Ser Leu Gly Val Lys Lys Pro  
 165 170 175



Thr Lys Ala Leu Leu Phe Val Leu Leu Ser Pro Val Gly Pro Tyr Phe  
 180 185 190

Ser Ser Gly Thr Phe Asn Pro Val Ser Leu Trp Ala Asn Pro Lys Tyr  
 195 200 205

Val Arg Ala Trp Lys Gly Gly Thr Gly Asp Cys Lys Met Gly Gly Asn  
 210 215 220

Tyr Gly Ser Ser Leu Phe Ala Gln Cys Glu Asp Val Asp Asn Gly Cys  
 225 230 235 240

Gln Gln Val Leu Trp Leu Tyr Gly Arg Asp His Gln Ile Thr Glu Val  
 245 250 255

Gly Thr Met Asn Leu Phe Leu Tyr Trp Ile Asn Glu Asp Gly Glu Glu  
 260 265 270

Glu Leu Ala Thr Pro Pro Leu Asp Gly Ile Ile Leu Pro Gly Val Thr  
 275 280 285

Arg Arg Cys Ile Leu Asp Leu Ala His Gln Trp Gly Glu Phe Lys Val  
 290 295 300

Ser Glu Arg Tyr Leu Thr Met Asp Asp Leu Thr Thr Ala Leu Glu Gly  
 305 310 315 320

Asn Arg Val Arg Glu Met Phe Ser Ser Gly Thr Ala Cys Val Val Cys  
 325 330 335

Pro Val Ser Asp Ile Leu Tyr Lys Gly Glu Thr Ile His Ile Pro Thr  
 340 345 350

Met Glu Asn Gly Pro Lys Leu Ala Ser Arg Ile Leu Ser Lys Leu Thr  
 355 360 365

Asp Ile Gln Tyr Gly Arg Glu Glu Ser Asp Trp Thr Ile Val Leu Ser  
 370 375 380

<210> 264  
 <211> 2732  
 <212> DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 264

```

cgcgtcctgt cccggcgcct tccgcgcacc ggccaccgcc agtctccgag ccccgtagacc      60
tgcaggtcct ccggccgcga ctccgggccg gccctgcgtg gtggctgtcg gggggcgcgc      120
ggggaagcag cggaacttgc ggtgtgaggg gccggcgggg cccggagcgg tccccggccc      180
gggaaacttg gaccgagacc aggccggcga ccaccagggg cctgaggatg aagccaagtc      240
tgctgtgccg gccctgtcc tgcttcctta tgctgtgcc ctggcctctc gccaccctga      300
catcaacaac cttttggcag tgcccacctg gggaggagcc cgacctggac ccagggcagg      360
gcacattatg caggccctgc ccccaggca cttctcagc tgcattgggc tccagcccat      420
gccagcccca tgcccgttgc agcctttgga ggaggctgga ggcccagggt ggcatggcaa      480
ctcgagatac actctgtgga gactgtggc ctgggtggtt tgggccttgg ggggttcccc      540
gcgttccatg tcaaccatgt tcctgggcac ctctgggtac tcatggctgt gatgagtggg      600
ggcggcgggc ccgacgtggc gtggaggtgg cagcaggggc cagcagcggg ggtgagacac      660
ggcagcctgg gaacggcacc cgggcagggt gccagagga gacagccgcc cagtacgcgg      720
tcatcgccat cgtccctgtc ttctgcctca tggggctggt gggcatcctg gtgtgcaacc      780
tcctcaagcg gaagggctac cactgcacgg cgcacaagga gtcggggccc ggccctggag      840
gtggaggcag tggaatcaac cctgcctacc ggactgagga tgccaatgag gacaccattg      900
gggtcctggt gcgcttgatc acagagaaga aagagaatgc tgcggccctg gaggagctgc      960
tgaaagagta ccacagcaaa cagctggtgc agacgagcca caggcctgtg tccaagctgc     1020
cgccagcgcc ccggaacgtg ccacacatct gccgcaccg ccaccatctc cacaccgtgc     1080
agggcctggc ctgctctctt ggccctgct gctcccgctg tagccagaag aagtggcccc     1140
aggtgctgct gtcccctgag gctgtagccg ccactactcc tgttcccagc cttctgccta     1200
acccgaccag ggttcccaag gccggggcca aggcagggcg tcagggcgag atcaccatct     1260
tgtctgtggg caggttccgc gtggctcgaa ttctgagca gcggacaagt tcaatggtgt     1320
ctgaggtgaa gaccatcacg gaggtgggc cctcgtgggg tgatctccct gactccccac     1380
agcctggcct cccccctgag cagcagggcc tgctaggaag tggcggaagc cgtacaaagt     1440
ggctgaagcc ccagcagag aacaaggccg aggagaaccg ctatgtggtc cggctaagtg     1500
agagcaacct ggtcatctga ggggcggtct agtctaagga cactgcggcc ctgccctggg     1560
aggttccgaa ggcttcctgg aggaggtgga gctgcagctg ggactgtgag gaccgagaag     1620

```

```

caatggccca gcagacgaga cagcaaagac caaggcctgg aggtgggagc gtctgcccc 1680
gtgaggaggc aggtggccgg cgggcactgt gtacaggagc aggtgagcc cggcccctgg 1740
ccctgctgcc atgttgctcc cctgaaggat gccccgaccc ccgtgcctgc cctggctgga 1800
tcctaggagc ccacgggatt ctctgtatca tcagaggctg ggcttggcag aggggagggg 1860
cctgtgcccc tcacccctgg cccattcct tggttaattag ccacaccctt gcctctktac 1920
agggccctaa gacagatgt kcgtycccct cctyttcag caggtctata aagggaagg 1980
ggtagcagaa aagtcctggg ctargagagt ggtccctgg gttctaattc tgggcacatc 2040
tgtgscatc rctgggtcca ttttcttsac tgtgaagtaa ggagagamgt ctcagtacc 2100
agggcctctt cagctctttg taggttctgg gctgggttgt gggggactgg ggagctgggc 2160
ttctaccaat cccctcccca attagtagct tttatcccag cccccgtttt ttgctgcttt 2220
ccagggcctt ctgccttcaa ggcccccatg gggcttgtcc catccatggc tctgcctacg 2280
gaaggggctt aatgcatgtg cctgcccctc cccagctgt ttttaatgaa actgaaaaaa 2340
tagacttgat cccggcagga ctgtgataca gagccctagc cctgcccagc ccagcccaa 2400
gatctcagga gctttaggga gaagacttgg tggggctgga gcacacctg ggccttcagt 2460
ggtttctgtg tccctgtggt gccagtgtt ctgggcagtg caggcggtg ccaggcccag 2520
ccctgacttc cactctggct cagcaacctg gttatttatg tggggccgtg caggcatggg 2580
cccactgcct gtccatcctg tttctcttat ttattgaaac tcaccattgc cctatccttg 2640
tgtctccacc ccctccatg tgttgaataa taaaaggagg gaaagtgcaa aaaaaaaaaa 2700
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 2732

```

<210> 265  
 <211> 430  
 <212> PRT  
 <213> Homo sapiens

<400> 265

```

Met Lys Pro Ser Leu Leu Cys Arg Pro Leu Ser Cys Phe Leu Met Leu
1           5           10           15

```

```

Leu Pro Trp Pro Leu Ala Thr Leu Thr Ser Thr Thr Leu Trp Gln Cys
20           25           30

```

```

Pro Pro Gly Glu Glu Pro Asp Leu Asp Pro Gly Gln Gly Thr Leu Cys
35           40           45

```

Arg Pro Cys Pro Pro Gly Thr Phe Ser Ala Ala Trp Gly Ser Ser Pro  
 50 55 60  
 Cys Gln Pro His Ala Arg Cys Ser Leu Trp Arg Arg Leu Glu Ala Gln  
 65 70 75 80  
 Val Gly Met Ala Thr Arg Asp Thr Leu Cys Gly Asp Cys Trp Pro Gly  
 85 90 95  
 Trp Phe Gly Pro Trp Gly Val Pro Arg Val Pro Cys Gln Pro Cys Ser  
 100 105 110  
 Trp Ala Pro Leu Gly Thr His Gly Cys Asp Glu Trp Gly Arg Arg Ala  
 115 120 125  
 Arg Arg Gly Val Glu Val Ala Ala Gly Ala Ser Ser Gly Gly Glu Thr  
 130 135 140  
 Arg Gln Pro Gly Asn Gly Thr Arg Ala Gly Gly Pro Glu Glu Thr Ala  
 145 150 155 160  
 Ala Gln Tyr Ala Val Ile Ala Ile Val Pro Val Phe Cys Leu Met Gly  
 165 170 175  
 Leu Leu Gly Ile Leu Val Cys Asn Leu Leu Lys Arg Lys Gly Tyr His  
 180 185 190  
 Cys Thr Ala His Lys Glu Val Gly Pro Gly Pro Gly Gly Gly Gly Ser  
 195 200 205  
 Gly Ile Asn Pro Ala Tyr Arg Thr Glu Asp Ala Asn Glu Asp Thr Ile  
 210 215 220  
 Gly Val Leu Val Arg Leu Ile Thr Glu Lys Lys Glu Asn Ala Ala Ala  
 225 230 235 240  
 Leu Glu Glu Leu Leu Lys Glu Tyr His Ser Lys Gln Leu Val Gln Thr  
 245 250 255  
 Ser His Arg Pro Val Ser Lys Leu Pro Pro Ala Pro Pro Asn Val Pro  
 260 265 270

His Ile Cys Pro His Arg His His Leu His Thr Val Gln Gly Leu Ala  
 275 280 285  
 Ser Leu Ser Gly Pro Cys Cys Ser Arg Cys Ser Gln Lys Lys Trp Pro  
 290 295 300  
 Glu Val Leu Leu Ser Pro Glu Ala Val Ala Ala Thr Thr Pro Val Pro  
 305 310 315 320  
 Ser Leu Leu Pro Asn Pro Thr Arg Val Pro Lys Ala Gly Ala Lys Ala  
 325 330 335  
 Gly Arg Gln Gly Glu Ile Thr Ile Leu Ser Val Gly Arg Phe Arg Val  
 340 345 350  
 Ala Arg Ile Pro Glu Gln Arg Thr Ser Ser Met Val Ser Glu Val Lys  
 355 360 365  
 Thr Ile Thr Glu Ala Gly Pro Ser Trp Gly Asp Leu Pro Asp Ser Pro  
 370 375 380  
 Gln Pro Gly Leu Pro Pro Glu Gln Gln Ala Leu Leu Gly Ser Gly Gly  
 385 390 395 400  
 Ser Arg Thr Lys Trp Leu Lys Pro Pro Ala Glu Asn Lys Ala Glu Glu  
 405 410 415  
 Asn Arg Tyr Val Val Arg Leu Ser Glu Ser Asn Leu Val Ile  
 420 425 430

<210> 266  
 <211> 3696  
 <212> DNA  
 <213> Homo sapiens

<400> 266  
 accagacagt tcttaaatta gcaagccttc aaaacccaaaa atgggggtcga aaagaggcat 60  
 atctttotagg catcattctc tcagctccta tgaaatcatg tttgcagctc tctttgccat 120  
 attggtagtg ctctgtgctg gattaattgc agtatcctgc ctgacaatca aggaatccca 180  
 acgaggtgca gcacttggac agagtcatga agccagagcg acatttaaaa taacatccgg 240  
 agttacatat aatcctaatt tgcaagacaa actctcagtg gatttcaaag ttcttgcttt 300

tgaccttcag caaatgatag atgagatctt tctatcaagc aatctgaaga atgaatataa	360
gaactcaaga gttttacaat ttgaaaatgg cagcattata gtcgtatttg accttttctt	420
tgcccagtgg gtgtcagatc aaaatgtaaa agaagaactg attcaaggcc ttgaagcaaa	480
taaatccagc caactgggtca ctttccatat tgatttgaac agcgttgata tcctagacaa	540
gctaacaacc accagtcatc tggcaactcc aggaaatgtc tcaatagagt gcctgcctgg	600
ttcaagtcct tgtactgatg ctctaactgt tataaaagct gatttatttt gtgatggaga	660
agtaaactgt ccagatgggt ctgacgaaga caataaaatg tgtgccacag tttgtgatgg	720
aagatttttg ttaactggat catctgggtc tttccaggct actcattatc caaaccttc	780
tgaacaagt gttgtctgcc agtggatcat acgtgtaaac caaggacttt ccattaaact	840
gagcttcgat gattttaata catattatac agatatatta gatatttatg aaggtgtagg	900
atcaagcaag attttaagag cttctatttg ggaaactaat cctggcacia taagaatttt	960
ttccaaccaa gttactgcca cttttcttat agaactgat gaaagtgatt atgttggtt	1020
taatgcaaca tatactgcat ttaacagcag tgagcttaat aattatgaga aaattaattg	1080
taactttgag gatggctttt gtttctgggt ccaggatcta aatgatgata atgaatggga	1140
aaggattcag ggaagcacct tttctccttt tactggaccc aattttgacc acacttttgg	1200
caatgcttca ggattttaca tttctacccc aactggacca ggaggagac aagaacgagt	1260
ggggctttta agcctccctt tggacccac tttggagcca gcttgctta gtttctggta	1320
tcatatgtat ggtgaaaatg tccataaatt aagcattaat atcagcaatg accaaaatat	1380
ggagaagaca gttttccaaa aggaaggaaa ttatggagac aattggaatt atggacaagt	1440
aaccctaaat gaaacagtta aatttaagggt tgcttttaat gcttttaaaa acaagatcct	1500
gagtgatatt gcgttggtg acattagcct aacatatggg atttgcaatg ggagtcttta	1560
tccagaacca actttggtgc caactcctcc accagaactt cctacggact gtggaggacc	1620
ttttgagctg tgggagccaa atacaacatt cagttctacg aactttccaa acagctaccc	1680
taatctggct ttctgtgttt ggattttaaa tgcacaaaaa ggaaagaata tacaacttca	1740
ttttcaagaa ttgacttag aaaatattaa cgatgtagtt gaaataagag atggtgaaga	1800
agctgattcc ttgctcttag ctgtgtacac agggcctggc ccagtaaagg atgtgttctc	1860
taccaccaac agaatgactg tgcttctcat cactaacgat gtgttggcaa gaggagggtt	1920
taaagcaaac ttactactg gctatcactt ggggattcca gagccatgca aggcagacca	1980

ttttcaatgt	aaaaatggag	agtgtgttcc	actggtgaat	ctctgtgacg	gtcatctgca	2040
ctgtgaggat	ggctcagatg	aagcagattg	tgtgcgtttt	ttcaatggca	caacgaacaa	2100
caatggttta	gtgcggttca	gaatccagag	catatggcat	acagcttggtg	ctgagaactg	2160
gaccacccag	atttcaaatg	atgtttgtca	actgctggga	ctagggagtg	gaaactcatc	2220
aaagccaatc	ttctctaccg	atggtggacc	atttgtcaaa	ttaaacacag	cacctgatgg	2280
ccacttaata	ctaacaccca	gtcaacagtg	tttacaggat	tccttgattc	ggttacagtg	2340
taaccataaa	tcttgtggaa	aaaaactggc	agctcaagac	atcaccccaa	agattgttgg	2400
aggaagtaat	gccaaagaag	gggcctggcc	ctgggttggtg	ggtctgtatt	atggcggccg	2460
actgctctgc	ggcgcattctc	tcgtcagcag	tgactggctg	gtgtccgccg	cacactgcgt	2520
gtatgggaga	aacttagagc	catccaagtg	gacagcaatc	ctaggcctgc	atatgaaatc	2580
aaatctgacc	tctcctcaaa	cagtcctctg	attaatagat	gaaattgtca	taaacctctca	2640
ttacaatagg	cgaagaaagg	acaacgacat	tgccatgatg	catctggaat	ttaaagtga	2700
ttacacagat	tacatacaac	ctatttgttt	accggaagaa	aatcaagttt	ttcctccagg	2760
aagaaattgt	tctattgctg	gttgggggac	ggttgatat	caaggtacta	ctgcaaacat	2820
attgcaagaa	gctgatgttc	ctcttctatc	aaatgagaga	tgccaacagc	agatgccaga	2880
atataacatt	actgaaaata	tgatatgtgc	aggctatgaa	gaaggaggaa	tagattcttg	2940
tcagggggat	tcaggaggac	cattaatgtg	ccaagaaaac	aacaggtggt	tccttgctgg	3000
tgtgacctca	tttgataca	agtgtgccct	gcctaatacg	cccggagtgt	atgccagggt	3060
ctcaaggttt	accgaatgga	tacaaagttt	tctacattag	cgcatttctt	aaactaaaca	3120
ggaaagtcgc	attattttcc	cattctactc	tagaaagcat	ggaaattaag	tgtttcgtac	3180
aaaaatttta	aaaagttacc	aaaggttttt	attcttacct	atgtcaatga	aatgctaggg	3240
ggccagggaa	acaaaatttt	aaaaataata	aaattcacca	tagcaataca	gaataacttt	3300
aaaataccat	taaatacatt	tgtatttcat	tgtgaacagg	tatttcttca	cagatctcat	3360
ttttaaaatt	cttaatgatt	atttttatta	cttactgttg	tttaaaggga	tgttatttta	3420
aagcatatac	catacactta	agaaatttga	gcagaattta	aaaaagaaag	aaaataaatt	3480
gtttttccca	aagtatgtca	ctgttgga	ttaaactgcca	taaattttct	agttccagtt	3540
tagtttgctg	ctattagcag	aaactcaatt	gtttctctgt	cttttctatc	aaaattttca	3600
acatatgcat	aaccttagta	ttttcccaac	caatagaaac	tattttattgt	aagcttatgt	3660

cacaggcctg gactaaattg attttacgtt cctctt

3696

<210> 267  
 <211> 1019  
 <212> PRT  
 <213> Homo sapiens

<400> 267

Met Gly Ser Lys Arg Gly Ile Ser Ser Arg His His Ser Leu Ser Ser  
 1 5 10 15

Tyr Glu Ile Met Phe Ala Ala Leu Phe Ala Ile Leu Val Val Leu Cys  
 20 25 30

Ala Gly Leu Ile Ala Val Ser Cys Leu Thr Ile Lys Glu Ser Gln Arg  
 35 40 45

Gly Ala Ala Leu Gly Gln Ser His Glu Ala Arg Ala Thr Phe Lys Ile  
 50 55 60

Thr Ser Gly Val Thr Tyr Asn Pro Asn Leu Gln Asp Lys Leu Ser Val  
 65 70 75 80

Asp Phe Lys Val Leu Ala Phe Asp Leu Gln Gln Met Ile Asp Glu Ile  
 85 90 95

Phe Leu Ser Ser Asn Leu Lys Asn Glu Tyr Lys Asn Ser Arg Val Leu  
 100 105 110

Gln Phe Glu Asn Gly Ser Ile Ile Val Val Phe Asp Leu Phe Phe Ala  
 115 120 125

Gln Trp Val Ser Asp Gln Asn Val Lys Glu Glu Leu Ile Gln Gly Leu  
 130 135 140

Glu Ala Asn Lys Ser Ser Gln Leu Val Thr Phe His Ile Asp Leu Asn  
 145 150 155 160

Ser Val Asp Ile Leu Asp Lys Leu Thr Thr Thr Ser His Leu Ala Thr  
 165 170 175

Pro Gly Asn Val Ser Ile Glu Cys Leu Pro Gly Ser Ser Pro Cys Thr  
 180 185 190



Asp Ala Leu Thr Cys Ile Lys Ala Asp Leu Phe Cys Asp Gly Glu Val  
 195 200 205  
 Asn Cys Pro Asp Gly Ser Asp Glu Asp Asn Lys Met Cys Ala Thr Val  
 210 215 220  
 Cys Asp Gly Arg Phe Leu Leu Thr Gly Ser Ser Gly Ser Phe Gln Ala  
 225 230 235 240  
 Thr His Tyr Pro Lys Pro Ser Glu Thr Ser Val Val Cys Gln Trp Ile  
 245 250 255  
 Ile Arg Val Asn Gln Gly Leu Ser Ile Lys Leu Ser Phe Asp Asp Phe  
 260 265 270  
 Asn Thr Tyr Tyr Thr Asp Ile Leu Asp Ile Tyr Glu Gly Val Gly Ser  
 275 280 285  
 Ser Lys Ile Leu Arg Ala Ser Ile Trp Glu Thr Asn Pro Gly Thr Ile  
 290 295 300  
 Arg Ile Phe Ser Asn Gln Val Thr Ala Thr Phe Leu Ile Glu Ser Asp  
 305 310 315 320  
 Glu Ser Asp Tyr Val Gly Phe Asn Ala Thr Tyr Thr Ala Phe Asn Ser  
 325 330 335  
 Ser Glu Leu Asn Asn Tyr Glu Lys Ile Asn Cys Asn Phe Glu Asp Gly  
 340 345 350  
 Phe Cys Phe Trp Val Gln Asp Leu Asn Asp Asp Asn Glu Trp Glu Arg  
 355 360 365  
 Ile Gln Gly Ser Thr Phe Ser Pro Phe Thr Gly Pro Asn Phe Asp His  
 370 375 380  
 Thr Phe Gly Asn Ala Ser Gly Phe Tyr Ile Ser Thr Pro Thr Gly Pro  
 385 390 395 400  
 Gly Gly Arg Gln Glu Arg Val Gly Leu Leu Ser Leu Pro Leu Asp Pro  
 405 410 415

Thr Leu Glu Pro Ala Cys Leu Ser Phe Trp Tyr His Met Tyr Gly Glu  
 420 425 430

Asn Val His Lys Leu Ser Ile Asn Ile Ser Asn Asp Gln Asn Met Glu  
 435 440 445

Lys Thr Val Phe Gln Lys Glu Gly Asn Tyr Gly Asp Asn Trp Asn Tyr  
 450 455 460

Gly Gln Val Thr Leu Asn Glu Thr Val Lys Phe Lys Val Ala Phe Asn  
 465 470 475 480

Ala Phe Lys Asn Lys Ile Leu Ser Asp Ile Ala Leu Asp Asp Ile Ser  
 485 490 495

Leu Thr Tyr Gly Ile Cys Asn Gly Ser Leu Tyr Pro Glu Pro Thr Leu  
 500 505 510

Val Pro Thr Pro Pro Pro Glu Leu Pro Thr Asp Cys Gly Gly Pro Phe  
 515 520 525

Glu Leu Trp Glu Pro Asn Thr Thr Phe Ser Ser Thr Asn Phe Pro Asn  
 530 535 540

Ser Tyr Pro Asn Leu Ala Phe Cys Val Trp Ile Leu Asn Ala Gln Lys  
 545 550 555 560

Gly Lys Asn Ile Gln Leu His Phe Gln Glu Phe Asp Leu Glu Asn Ile  
 565 570 575

Asn Asp Val Val Glu Ile Arg Asp Gly Glu Glu Ala Asp Ser Leu Leu  
 580 585 590

Leu Ala Val Tyr Thr Gly Pro Gly Pro Val Lys Asp Val Phe Ser Thr  
 595 600 605

Thr Asn Arg Met Thr Val Leu Leu Ile Thr Asn Asp Val Leu Ala Arg  
 610 615 620

Gly Gly Phe Lys Ala Asn Phe Thr Thr Gly Tyr His Leu Gly Ile Pro  
 625 630 635 640

Glu Pro Cys Lys Ala Asp His Phe Gln Cys Lys Asn Gly Glu Cys Val  
645 650 655

Pro Leu Val Asn Leu Cys Asp Gly His Leu His Cys Glu Asp Gly Ser  
660 665 670

Asp Glu Ala Asp Cys Val Arg Phe Phe Asn Gly Thr Thr Asn Asn Asn  
675 680 685

Gly Leu Val Arg Phe Arg Ile Gln Ser Ile Trp His Thr Ala Cys Ala  
690 695 700

Glu Asn Trp Thr Thr Gln Ile Ser Asn Asp Val Cys Gln Leu Leu Gly  
705 710 715 720

Leu Gly Ser Gly Asn Ser Ser Lys Pro Ile Phe Ser Thr Asp Gly Gly  
725 730 735

Pro Phe Val Lys Leu Asn Thr Ala Pro Asp Gly His Leu Ile Leu Thr  
740 745 750

Pro Ser Gln Gln Cys Leu Gln Asp Ser Leu Ile Arg Leu Gln Cys Asn  
755 760 765

His Lys Ser Cys Gly Lys Lys Leu Ala Ala Gln Asp Ile Thr Pro Lys  
770 775 780

Ile Val Gly Gly Ser Asn Ala Lys Glu Gly Ala Trp Pro Trp Val Val  
785 790 795 800

Gly Leu Tyr Tyr Gly Gly Arg Leu Leu Cys Gly Ala Ser Leu Val Ser  
805 810 815

Ser Asp Trp Leu Val Ser Ala Ala His Cys Val Tyr Gly Arg Asn Leu  
820 825 830

Glu Pro Ser Lys Trp Thr Ala Ile Leu Gly Leu His Met Lys Ser Asn  
835 840 845

Leu Thr Ser Pro Gln Thr Val Pro Arg Leu Ile Asp Glu Ile Val Ile  
850 855 860

Asn Pro His Tyr Asn Arg Arg Arg Lys Asp Asn Asp Ile Ala Met Met  
865 870 875 880

His Leu Glu Phe Lys Val Asn Tyr Thr Asp Tyr Ile Gln Pro Ile Cys  
885 890 895

Leu Pro Glu Glu Asn Gln Val Phe Pro Pro Gly Arg Asn Cys Ser Ile  
900 905 910

Ala Gly Trp Gly Thr Val Val Tyr Gln Gly Thr Thr Ala Asn Ile Leu  
915 920 925

Gln Glu Ala Asp Val Pro Leu Leu Ser Asn Glu Arg Cys Gln Gln Gln  
930 935 940

Met Pro Glu Tyr Asn Ile Thr Glu Asn Met Ile Cys Ala Gly Tyr Glu  
945 950 955 960

Glu Gly Gly Ile Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Met  
965 970 975

Cys Gln Glu Asn Asn Arg Trp Phe Leu Ala Gly Val Thr Ser Phe Gly  
980 985 990

Tyr Lys Cys Ala Leu Pro Asn Arg Pro Gly Val Tyr Ala Arg Val Ser  
995 1000 1005

Arg Phe Thr Glu Trp Ile Gln Ser Phe Leu His  
1010 1015

<210> 268

<211> 1186

<212> DNA

<213> Homo sapiens

<400> 268

ggggctgcag tagcagcggc gccgcccgcg gctcccgcgtg gggcctgggc gccggccccg	60
ctctgcagga tgggcacagt gctgtctctt tcgcctgcct cctcggccaa gggccggagg	120
cccggcgggc tgcccagga gaagaagaag gcgcccggccg cgggggacga ggcgctgggg	180
ggctacgggg cgccgccagt gggcaagggc ggcaaaggcg agagccgact caagcggccg	240
tccgtgctca tctcggcgct cacctggaag cgcttggtgg ccgcgtccgc caagaagaag	300

```

aaaggcagca agaaggtgac acccaagccg gcatccacgg gccccgaccc cctggtccag    360
caacgcaacc gcgagaacct tctccgcaag ggccgggata cccccgacgg cggcggcacc    420
gccaaagcccc tggcgggtgcc agtgcccacc gtgcccgcgg ctgccgccac ctgcgagcca    480
ccgtcggggg gcagcgcggc cgctcagccg ccgggctcgg gcgggggaaa gcctccgccg    540
ccgcctcccc cagccccgca ggtggcgccg ccggtgcctg gcggctcgcc gcggcgggtc    600
atcgtgcagg cgtccaccgg cgagctgctg cgctgtctgg gcgacttcgt gtgccgacgc    660
tgctatcgcc tcaaggagct gagcccgggc gagctggtgg gctgggtccg cggtgtggac    720
cgctcgctgc tgctgcaggg ctggcaagac caggccttca ttacgcctgc aaacctggtg    780
ttcgtgtacc tgctgtgccg cgagtcgctg cgtggggacg agctggcgtc ggccgccgag    840
ctgcaggccg ccttcctcac ctgcctctac ctgcctact cctacatggg caacgagatc    900
tcctaccac tcaagccctt cctcgtggag cccgacaagg agcgcttctg gcagcgctgc    960
ctgcgcctca tccagcggct cagcccgag atgctgcggc tcaacgccga cccccacttc   1020
ttcacgcagg tctttcaaga cctcaagaac gagggcgagg ccgccgccag cgggtgggggc   1080
ccaccgagcg ggggcgcgcc cgccgcctcc tcggccgcca gggacagctg cgcggccgga   1140
accaagcact ggactatgaa cctggaccgc tagggatacc cagggg                    1186

```

```

<210> 269
<211> 367
<212> PRT
<213> Homo sapiens

```

```

<400> 269

```

```

Met Gly Thr Val Leu Ser Leu Ser Pro Ala Ser Ser Ala Lys Gly Arg
1           5           10           15

```

```

Arg Pro Gly Gly Leu Pro Glu Glu Lys Lys Lys Ala Pro Pro Ala Gly
20           25           30

```

```

Asp Glu Ala Leu Gly Gly Tyr Gly Ala Pro Pro Val Gly Lys Gly Gly
35           40           45

```

```

Lys Gly Glu Ser Arg Leu Lys Arg Pro Ser Val Leu Ile Ser Ala Leu
50           55           60

```

```

Thr Trp Lys Arg Leu Val Ala Ala Ser Ala Lys Lys Lys Lys Gly Ser
65           70           75           80

```

Lys Lys Val Thr Pro Lys Pro Ala Ser Thr Gly Pro Asp Pro Leu Val  
 85 90 95

Gln Gln Arg Asn Arg Glu Asn Leu Leu Arg Lys Gly Arg Asp Pro Pro  
 100 105 110

Asp Gly Gly Gly Thr Ala Lys Pro Leu Ala Val Pro Val Pro Thr Val  
 115 120 125

Pro Ala Ala Ala Ala Thr Cys Glu Pro Pro Ser Gly Gly Ser Ala Ala  
 130 135 140

Ala Gln Pro Pro Gly Ser Gly Gly Gly Lys Pro Pro Pro Pro Pro Pro  
 145 150 155 160

Pro Ala Pro Gln Val Ala Pro Pro Val Pro Gly Gly Ser Pro Arg Arg  
 165 170 175

Val Ile Val Gln Ala Ser Thr Gly Glu Leu Leu Arg Cys Leu Gly Asp  
 180 185 190

Phe Val Cys Arg Arg Cys Tyr Arg Leu Lys Glu Leu Ser Pro Gly Glu  
 195 200 205

Leu Val Gly Trp Phe Arg Gly Val Asp Arg Ser Leu Leu Leu Gln Gly  
 210 215 220

Trp Gln Asp Gln Ala Phe Ile Thr Pro Ala Asn Leu Val Phe Val Tyr  
 225 230 235 240

Leu Leu Cys Arg Glu Ser Leu Arg Gly Asp Glu Leu Ala Ser Ala Ala  
 245 250 255

Glu Leu Gln Ala Ala Phe Leu Thr Cys Leu Tyr Leu Ala Tyr Ser Tyr  
 260 265 270

Met Gly Asn Glu Ile Ser Tyr Pro Leu Lys Pro Phe Leu Val Glu Pro  
 275 280 285

Asp Lys Glu Arg Phe Trp Gln Arg Cys Leu Arg Leu Ile Gln Arg Leu  
 290 295 300

Ser Pro Gln Met Leu Arg Leu Asn Ala Asp Pro His Phe Phe Thr Gln  
305 310 315 320

Val Phe Gln Asp Leu Lys Asn Glu Gly Glu Ala Ala Ala Ser Gly Gly  
325 330 335

Gly Pro Pro Ser Gly Gly Ala Pro Ala Ala Ser Ser Ala Ala Arg Asp  
340 345 350

Ser Cys Ala Ala Gly Thr Lys His Trp Thr Met Asn Leu Asp Arg  
355 360 365

<210> 270  
<211> 513  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (457)..(457)  
<223> n = unknown

<220>  
<221> misc\_feature  
<222> (497)..(497)  
<223> n = unknown

<220>  
<221> misc\_feature  
<222> (499)..(499)  
<223> n = unknown

<220>  
<221> misc\_feature  
<222> (509)..(509)  
<223> n = unknown

<400> 270  
ttttattttt ttttttctta aaaaggatac tttaatttat tgacactggg aagcacattg 60  
gcaaagaaag tcaatttctt ttacagtatc taatagctat ttctattgcc tgttcaaact 120  
agcaaaatgt aacagatgct agattcccta aagtacggcg ctttaggtta catttgcaac 180  
aatagcttac atctaaatgt tacattagtt actgaatttg taatcttcac aaatgtgtga 240  
atagtcagtt gatcaaaaat aacgatttcc tgctacaaga gaacgcatag cagaaaatgt 300

tcccaacaca aagataatgt ttgagatgat ggatatccca attacactga tttgataatt 360  
 atacattgaa tacatgtatc acaacatcag atgtatccct gaaaatatgt acaactatat 420  
 cagttttaag atataaaaaa aattttctgt ccaaagntaa atatgtacaa ctacgatata 480  
 tcagttttaa gatacanana atataattnt ctg 513

<210> 271  
 <211> 34  
 <212> PRT  
 <213> Homo sapiens

<400> 271

Met Leu Asp Ser Leu Lys Tyr Gly Ala Leu Gly Tyr Ile Cys Asn Asn  
 1 5 10 15

Ser Leu His Leu Asn Val Thr Leu Val Thr Glu Phe Val Ile Phe Thr  
 20 25 30

Asn Val

<210> 272  
 <211> 408  
 <212> DNA  
 <213> Homo sapiens

<400> 272  
 ttagtttttg ggggattttt ccctggcaga tatatagagc aatgcttttt ctctttggat 60  
 cctgttcccta ccctgggaat tcttttcagt caactgaaat tttgttaaaa agcaatttta 120  
 tgttccctcc atctgttcac ttttttggtg ttgttggtgt cggcatgatt tttactgaga 180  
 aaaatgtaaa acatccttgg cctttttggg aagtttaaaa tcttcccaa ttagagccctc 240  
 taagaattgt tttcccatth actgttggcc cttcttcctt tctgccacct tcaataacac 300  
 acgaagaaat cgagaggga cttctagcag tcctgagacc ccttgagaaa ccagaaaaag 360  
 gtgccataca ccctcctttt tgggggtcttt tgtcttcctc acggagcc 408

<210> 273  
 <211> 58  
 <212> PRT  
 <213> Homo sapiens

<400> 273



Met Leu Phe Leu Phe Gly Ser Cys Ser Tyr Pro Gly Asn Ser Phe Gln  
 1 5 10 15

Ser Thr Glu Ile Leu Leu Lys Ser Asn Phe Met Phe Leu Pro Ser Val  
 20 25 30

His Phe Phe Val Val Val Val Val Gly Met Ile Phe Thr Glu Lys Asn  
 35 40 45

Val Lys His Pro Trp Pro Phe Trp Glu Val  
 50 55

<210> 274  
 <211> 1646  
 <212> DNA  
 <213> Homo sapiens

<400> 274  
 gctcggctca ctgagacccg gtggtccaga cgctgctcct ggctggggtg gcgctgcagg 60  
 gagaaccgag agctctcagg ggtcggcggg tgacttcttt ccggaagaaa gcgaggaacg 120  
 cgctctgcgg ggtgagccgg actccccaac tccggacgat cagcccagga ctgagagccc 180  
 cgaagtcccc aaccacaagt aagcggcccc agaaggacaa gtctaggtcg ccgtccagag 240  
 cgccatggcc gcgcccggcc ttctgtttgtg ccacatcgcc ttccacgtgc ccgccgggca 300  
 gccoctagcc cggaacctgc agcgcctctt cggttccag cccctggctt cgcgggaggt 360  
 ggacggctgg cggcagctag ccttgccgag cggcgacgag gtcttttttg tgaacgaggg 420  
 cgcaggggtct ggagagccgc tgtacggcct ggatccgctg cagccgtgc ccagcgccac 480  
 aaacctgtgc ttcgacgtgg cggacgccgg cgctgcaacc cgggagctgg cagcgctggg 540  
 ctgcagcgtg cctgtccctc ccgttcgctg gcgggacgag cagggtgccg ccacttacgc 600  
 cgtggctcag tcgcctgccg gcatcctcag cctgaccttg ctggagcgcg ctggctaccg 660  
 cggacccttc ctaccgggt tcaggcccggt gtcctctgag cctggccccg ggtgggtcag 720  
 ccgcgtggac cacctgacct tggcctgcac ccccggcagc tccccacac ttttgcgctg 780  
 gttccacgac tgcttgggt tttgccactt gccgctgagc ccaggtgagg atcccagagct 840  
 gggcctcgaa atgacagcag ggtttgggt tgggggactg aggcttacag cctgcaggc 900  
 ccagccgggc agcattgtcc ccactcttgt tctggctgag tcccttccgg gggcgacgac 960  
 acgacaggac caggtggagc agttcctggc ccggcacaag gggccaggcc tgcagcacgt 1020

```

ggggctgtat acgcctaaca ttgtggaggc cactgagggg gtggcaactg ctggaggcca 1080
gttcctggct ccccttgggg catactacca gcagccagga aaggagaggc agatccgagc 1140
tgcagggcac gagcctcatc tgcttgctcg acaggggatc ctgctagatg gtgataaagg 1200
caagtttctg cttcaggtct tcaccaagtc cttttttact gaggacactt tcttcctgga 1260
gctgattcag aggcaggggg ccaactggctt tggtcagggc aacatcagag ctctgtggca 1320
gtccgtacag gagcaatctg ccaggagcca ggaagcctaa ggatgccag ggctgggtgc 1380
agccagctgt cctgcagctc tggggagacc agcacagaac tgaggaacat ctgcaggagg 1440
cccaactagt gaaaggcttt gcctccgggg ggcaggtgtg acttccattt catcagtgcc 1500
tgccagaagc tgtgtctctc attgggctcc aaagaggtgg gatTTTTTaa aactaaaaca 1560
tttcttatac acagtctata ataaatatgt aagatacaaa gaacaataaa agaattacac 1620
actaggaaaa aaaaaaaaaa aaaaaa 1646

```

<210> 275  
 <211> 393  
 <212> PRT  
 <213> Homo sapiens

<400> 275

```

Met Thr Thr Tyr Ser Asp Lys Gly Ala Lys Pro Glu Arg Gly Arg Phe
1           5           10           15

```

```

Leu His Phe His Ser Val Thr Phe Trp Val Gly Asn Ala Lys Gln Ala
          20           25           30

```

```

Ala Ser Phe Tyr Cys Ser Lys Met Gly Phe Glu Pro Leu Ala Tyr Arg
          35           40           45

```

```

Gly Leu Glu Thr Gly Ser Arg Glu Val Val Ser His Val Ile Lys Gln
          50           55           60

```

```

Gly Lys Ile Val Phe Val Leu Ser Ser Ala Leu Asn Pro Trp Asn Lys
65           70           75           80

```

```

Glu Met Gly Asp His Leu Val Lys His Gly Asp Gly Val Lys Asp Ile
          85           90           95

```

```

Ala Phe Glu Val Glu Asp Cys Asp Tyr Ile Val Gln Lys Ala Arg Glu
          100          105          110

```

Arg Gly Ala Lys Ile Met Arg Glu Pro Trp Val Glu Gln Asp Lys Phe  
 115 120 125

Gly Lys Val Lys Phe Ala Val Leu Gln Thr Tyr Gly Asp Thr Thr His  
 130 135 140

Thr Leu Val Glu Lys Met Asn Tyr Ile Gly Gln Phe Leu Pro Gly Tyr  
 145 150 155 160

Glu Ala Pro Ala Phe Met Asp Pro Leu Leu Pro Lys Leu Pro Lys Cys  
 165 170 175

Ser Leu Glu Met Ile Asp His Ile Val Gly Asn Gln Pro Asp Gln Glu  
 180 185 190

Met Val Ser Ala Ser Glu Trp Tyr Leu Lys Asn Leu Gln Phe His Arg  
 195 200 205

Phe Trp Ser Val Asp Asp Thr Gln Val His Thr Glu Tyr Ser Ser Leu  
 210 215 220

Arg Ser Ile Val Val Ala Asn Tyr Glu Glu Ser Ile Lys Met Pro Ile  
 225 230 235 240

Asn Glu Pro Ala Pro Gly Lys Lys Lys Ser Gln Ile Gln Glu Tyr Val  
 245 250 255

Asp Tyr Asn Gly Gly Ala Gly Val Gln His Ile Ala Leu Lys Thr Glu  
 260 265 270

Asp Ile Ile Thr Ala Ile Arg His Leu Arg Glu Arg Gly Leu Glu Phe  
 275 280 285

Leu Ser Val Pro Ser Thr Tyr Tyr Lys Gln Leu Arg Glu Lys Leu Lys  
 290 295 300

Thr Ala Lys Ile Lys Val Lys Glu Asn Ile Asp Ala Leu Glu Glu Leu  
 305 310 315 320

Lys Ile Leu Val Asp Tyr Asp Glu Lys Gly Tyr Leu Leu Gln Ile Phe  
 325 330 335

Thr Lys Pro Val Gln Asp Arg Pro Thr Leu Phe Leu Glu Val Ile Gln  
 340 345 350

Arg His Asn His Gln Gly Phe Gly Ala Gly Asn Phe Asn Ser Leu Phe  
 355 360 365

Lys Ala Phe Glu Glu Glu Gln Asn Leu Arg Gly Asn Leu Thr Asn Met  
 370 375 380

Glu Thr Asn Gly Val Val Pro Gly Met  
 385 390

<210> 276  
 <211> 1913  
 <212> DNA  
 <213> Homo sapiens

<400> 276  
 gcacgaggca ggccgaagtc cgcagccccg gctcggcgcc cgctgcttgc acctcccga 60  
 tgggtgctgac tgctccctaa gcggcgggcg cggcgagtcg tgaggacgcg ccgcggaggc 120  
 tgttcgggggt cgaggcttcc cgtcgccggc acttctcttt gcggcgcccc tgccgaggccg 180  
 gcccggcagg cgggatgagc ggccgcggct ccgggaacgg ccgcgcacgc gcgccccggc 240  
 tgcttctgct ctttctgggt ccgctgctgt gggccccggc tgcggtccgg gccggcccag 300  
 atgaagacct tagccaccgg aacaaagaac cgcggcgccc ggcccagcag ctgcagccgc 360  
 agcctgtggc tgtgcagggc cccgagccgg cccgggtcga gaaaatattt acaccagcag 420  
 ctccagttca taccaataaa gaagatcctg ctacccaaac taatttgga tttatccatg 480  
 catttgctgc tgccatatca gttattattg tatctgaatt gggtgataag acatTTTTTA 540  
 tagcagccat catggcaatg cgctataacc gcctgaccgt gctggctggg gcaatgcttg 600  
 ccttgggact aatgacatgc ttgtcagttt tgtttggcta tgccaccaca gtcacccca 660  
 ggggtctatac atactatgtt tcaactgtat tatttgccat ttttggcatt agaatgcttc 720  
 gggaaggcct aaagatgagc cctgatgagg gtcaagagga actggaagaa gttcaagctg 780  
 aattaaagaa gaaagatgaa gaatttcaac gaaccaaact tttaaagga ccgggagatg 840  
 ttgaaacggg tacaagcata acagtacctc agaaaaagtg gttgcatttt atttcaccca 900  
 tttttgttca agctcttaca ttaacattct tagcagaatg gggatgatgc tctcaactaa 960  
 ctacaattgt attggcagct agagaggacc cctatgggtg agccgtgggt ggaactgtgg 1020

```

ggcactgcct gtgcacggga ttggcagtaa ttggaggaag aatgatagca cagaaaatct 1080
ctgtcagaac tgtgacaatc ataggaggca tcgttttttt ggcgtttgca ttttctgcac 1140
tatttataag ccctgattct ggtttttaac gctgtttggt catctatatt tagtttaaaa 1200
taggtagtat tatctttctg tacatagtgt acattacaac taaaagtgat gggaaaaata 1260
ctgtattttg taggcactgg attttgtgag tttgaccctt tattatgtct ggaggatata 1320
atcattggat tcctatcttg tgccaaggga gtttttaaaa ggaaaccctg actttttaag 1380
tgtgggggtt ttttcttctc ttccaacct taattatggt ttaatatggt cctcattttt 1440
cttttggtgc agaaccgttg tgcagtgggg tctaccatgc aattttcttt cagcactgac 1500
ccctttttaa ggaatacaaa ttttctcctt catcacttag gtgttttaag atgtttacct 1560
taaagttttc ttggggaaag aatgaattaa tttctatttc ttaaaacatt tccctgagcc 1620
agtaaacagt agtttaatca ttggtctttt caaaactagg tgttttaaaaa aagagacata 1680
tatgatattg ctgttatatc aataacatgg cacaacaaga actgtctgcc aggtcattct 1740
tcctcttttt tttttaattg ggtaggacac cccatataaa aaccatccat atttggccat 1800
gtgggattac ccaaataaaa gaggaatcca tggatggatt cagaattttt ttaaatttaa 1860
taaaccaacc aacccttggt tcccatattt aattaaaagg agggttgccc agt 1913

```

```

<210> 277
<211> 324
<212> PRT
<213> Homo sapiens

```

```

<400> 277

```

```

Met Ser Gly Arg Gly Ser Gly Asn Gly Arg Ala Ser Ala Pro Arg Leu
1          5          10          15

```

```

Leu Leu Leu Phe Leu Val Pro Leu Leu Trp Ala Pro Ala Ala Val Arg
20          25          30

```

```

Ala Gly Pro Asp Glu Asp Leu Ser His Arg Asn Lys Glu Pro Pro Ala
35          40          45

```

```

Pro Ala Gln Gln Leu Gln Pro Gln Pro Val Ala Val Gln Gly Pro Glu
50          55          60

```

```

Pro Ala Arg Val Glu Lys Ile Phe Thr Pro Ala Ala Pro Val His Thr
65          70          75          80

```

Asn Lys Glu Asp Pro Ala Thr Gln Thr Asn Leu Gly Phe Ile His Ala  
 85 90 95

Phe Val Ala Ala Ile Ser Val Ile Ile Val Ser Glu Leu Gly Asp Lys  
 100 105 110

Thr Phe Phe Ile Ala Ala Ile Met Ala Met Arg Tyr Asn Arg Leu Thr  
 115 120 125

Val Leu Ala Gly Ala Met Leu Ala Leu Gly Leu Met Thr Cys Leu Ser  
 130 135 140

Val Leu Phe Gly Tyr Ala Thr Thr Val Ile Pro Arg Val Tyr Thr Tyr  
 145 150 155 160

Tyr Val Ser Thr Val Leu Phe Ala Ile Phe Gly Ile Arg Met Leu Arg  
 165 170 175

Glu Gly Leu Lys Met Ser Pro Asp Glu Gly Gln Glu Glu Leu Glu Glu  
 180 185 190

Val Gln Ala Glu Leu Lys Lys Lys Asp Glu Glu Phe Gln Arg Thr Lys  
 195 200 205

Leu Leu Asn Gly Pro Gly Asp Val Glu Thr Gly Thr Ser Ile Thr Val  
 210 215 220

Pro Gln Lys Lys Trp Leu His Phe Ile Ser Pro Ile Phe Val Gln Ala  
 225 230 235 240

Leu Thr Leu Thr Phe Leu Ala Glu Trp Gly Asp Arg Ser Gln Leu Thr  
 245 250 255

Thr Ile Val Leu Ala Ala Arg Glu Asp Pro Tyr Gly Val Ala Val Gly  
 260 265 270

Gly Thr Val Gly His Cys Leu Cys Thr Gly Leu Ala Val Ile Gly Gly  
 275 280 285

Arg Met Ile Ala Gln Lys Ile Ser Val Arg Thr Val Thr Ile Ile Gly  
 290 295 300

Gly Ile Val Phe Leu Ala Phe Ala Phe Ser Ala Leu Phe Ile Ser Pro  
 305 310 315 320

Asp Ser Gly Phe

<210> 278  
 <211> 369  
 <212> DNA  
 <213> Homo sapiens

<400> 278  
 attctattga cctccccaaa ggaggaggtc gtggccttcc caaagcgcag tagccacggt 60  
 ggaaacgaaa gcgtagcgca taagcctacc gtctaccgcc cgcacatcag gaacctcacg 120  
 gtacttcagg gaagcagtta agtcaagccg gcgcgtcaca ggcaactcggc gtgcaagccg 180  
 ccccgaggt gctaccgtct cttacctctc tctactttta ggaaacacgt tgtatccccg 240  
 gagggggtgc accgttcctg gaggtactgc aataccaggt cgatgcgtgg agtggacgga 300  
 gcaagtcctt attccatctc cctgctccaa aaatccattt aatatattgt cctcggatag 360  
 aggacgtat 369

<210> 279  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 279  
 Ile Leu Leu Thr Ser Pro Lys Glu Glu Val Val Ala Phe Pro Lys Arg  
 1 5 10 15

Ser Ser His Gly Gly Asn Glu Ser Val Pro His Lys Pro Thr Val Tyr  
 20 25 30

Arg Pro His Ile Arg Asn Leu Thr Val Leu Gln Gly Ser Ser  
 35 40 45

<210> 280  
 <211> 1601  
 <212> DNA  
 <213> Homo sapiens

<400> 280  
 agaggcggtg cggcacagag gagcgctcgc ttcacaaggt gaccctagct cccaccgcca 60

```

ccgccgcggt cgcgctccag acgccctcca gcagctccgc gccctcccag gcacccggcc 120
ttttttttct cctcttgcaa ccaagatccg tccggccgct ggagaccag ggagccggg 180
ttaggaactc acttggggct ttcccctccc ccaccggaga gccccgggat ggagagccga 240
aaggacatgg ttgtgtttct ggatgggggt cagcttgga ctctggttg caagagagtc 300
tcaaatttgt ccgaagccgt gggcagccc ctgccggagc cgcccagaa aatggtgccc 360
cgtggttgcc tgagccctcg gccgctccct ccggccaccc gggagcgcg cgggggaggc 420
ccggaggagg agccggtaga tggactcgca ggcagcgcg cggggcccgg cgccgagccc 480
caggtagctg gggcgcccat gctcggccca ggacccccgg cccctcagt cgacagcctc 540
tccggacagg ggcaaccag tagctcggac accgagtcgg atttctatga agaaatcgag 600
gtgagctgca ccccgactg cgccaccgg aacgccgagt accagcacag caaagggccc 660
ggctccgagg cgctggtcgg cagtccgaac ggagggagcg agaccccaa gagcaacggc 720
ggcagtggcg ggggcggctc gcaaggcacc ctggcgtgca gcgccagtga ccagatgcgt 780
cgttaccgca ccgccttcac ccgagagcag attgcgcggc tggagaagga attctaccgg 840
gagaactacg tatccaggcc gcggagatgt gagctggcgg ccgccctaaa cctgccggaa 900
accaccatca aggtgtggtt ccagaaccgg cgcatgaagg acaagcggca gcgcctggcc 960
atgacgtggc cgcacccggc ggaccccgcc ttctacactt acatgatgag ccatgcggcg 1020
gccgcgggcg gcctgcccta ccccttccca tcgcacctgc cctgcccta ctactcgccg 1080
gtgggcctgg gcgcgcctc cgccgcctcc gccgcgcct cgcccttcag cggctcgctg 1140
cgcccgctcg acacgttcg cgtgctgtcg cagccctacc cgcgcccgga actgctgtgc 1200
gccttcgcc acccgccgt ctaccccggg ccgcgcacg gactgggcgc ctctgccggc 1260
ggccctgct cctgcctcg ctgtcacagc ggcccgcca acgggctggc gcccgggct 1320
gccgcgcct cggacttcac ctgtgcctcc acctcccgct cggactcctt cctcaccttc 1380
gcgcctcgg tgctcagcaa ggcctcctcc gtcgcgctgg accagagga ggaggtgccc 1440
ctcactagat aaggggccc gctggtggct gccggctcca tgacgcccg ggggtcacc 1500
cccgcccg gactcagcca gcctcgctc ctcgctcctc gtcctcgcc cctaggacgc 1560
caagggggaa aggagagggc ggaaaaggac cagcgggatc c 1601

```

<210> 281  
<211> 407  
<212> PRT



&lt;213&gt; Homo sapiens

&lt;400&gt; 281

Met Glu Ser Arg Lys Asp Met Val Val Phe Leu Asp Gly Gly Gln Leu  
 1 5 10 15

Gly Thr Leu Val Gly Lys Arg Val Ser Asn Leu Ser Glu Ala Val Gly  
 20 25 30

Ser Pro Leu Pro Glu Pro Pro Glu Lys Met Val Pro Arg Gly Cys Leu  
 35 40 45

Ser Pro Arg Ala Val Pro Pro Ala Thr Arg Glu Arg Gly Gly Gly Gly  
 50 55 60

Pro Glu Glu Glu Pro Val Asp Gly Leu Ala Gly Ser Ala Ala Gly Pro  
 65 70 75 80

Gly Ala Glu Pro Gln Val Ala Gly Ala Ala Met Leu Gly Pro Gly Pro  
 85 90 95

Pro Ala Pro Ser Val Asp Ser Leu Ser Gly Gln Gly Gln Pro Ser Ser  
 100 105 110

Ser Asp Thr Glu Ser Asp Phe Tyr Glu Glu Ile Glu Val Ser Cys Thr  
 115 120 125

Pro Asp Cys Ala Thr Gly Asn Ala Glu Tyr Gln His Ser Lys Gly Ser  
 130 135 140

Gly Ser Glu Ala Leu Val Gly Ser Pro Asn Gly Gly Ser Glu Thr Pro  
 145 150 155 160

Lys Ser Asn Gly Gly Ser Gly Gly Gly Gly Ser Gln Gly Thr Leu Ala  
 165 170 175

Cys Ser Ala Ser Asp Gln Met Arg Arg Tyr Arg Thr Ala Phe Thr Arg  
 180 185 190

Glu Gln Ile Ala Arg Leu Glu Lys Glu Phe Tyr Arg Glu Asn Tyr Val  
 195 200 205

Ser Arg Pro Arg Arg Cys Glu Leu Ala Ala Ala Leu Asn Leu Pro Glu  
 210 215 220  
 Thr Thr Ile Lys Val Trp Phe Gln Asn Arg Arg Met Lys Asp Lys Arg  
 225 230 235 240  
 Gln Arg Leu Ala Met Thr Trp Pro His Pro Ala Asp Pro Ala Phe Tyr  
 245 250 255  
 Thr Tyr Met Met Ser His Ala Ala Ala Ala Gly Gly Leu Pro Tyr Pro  
 260 265 270  
 Phe Pro Ser His Leu Pro Leu Pro Tyr Tyr Ser Pro Val Gly Leu Gly  
 275 280 285  
 Ala Ala Ser Ala Ala Ser Ala Ala Ala Ser Pro Phe Ser Gly Ser Leu  
 290 295 300  
 Arg Pro Leu Asp Thr Phe Arg Val Leu Ser Gln Pro Tyr Pro Arg Pro  
 305 310 315 320  
 Glu Leu Leu Cys Ala Phe Arg His Pro Pro Leu Tyr Pro Gly Pro Ala  
 325 330 335  
 His Gly Leu Gly Ala Ser Ala Gly Gly Pro Cys Ser Cys Leu Ala Cys  
 340 345 350  
 His Ser Gly Pro Ala Asn Gly Leu Ala Pro Arg Ala Ala Ala Ser  
 355 360 365  
 Asp Phe Thr Cys Ala Ser Thr Ser Arg Ser Asp Ser Phe Leu Thr Phe  
 370 375 380  
 Ala Pro Ser Val Leu Ser Lys Ala Ser Ser Val Ala Leu Asp Gln Arg  
 385 390 395 400  
 Glu Glu Val Pro Leu Thr Arg  
 405

<210> 282  
 <211> 201  
 <212> DNA  
 <213> Homo sapiens

<400> 282  
 atcatgatcg ctctacatcg atacgacttt ttcttttttt tttttttttt ttttgcctag 60  
 tatgaaaata tacccaatac cacctttcttt attgctgact gggaatgtcc tctcaaagct 120  
 cctaaaattc ttgactgtct cctttttttgc ctttctctag ctggactatt ttgattatac 180  
 ccttctgtcg tcttctcgca g 201

<210> 283  
 <211> 32  
 <212> PRT  
 <213> Homo sapiens

<400> 283

Met Lys Ile Tyr Pro Ile Pro Pro Ser Leu Leu Leu Thr Gly Asn Val  
 1 5 10 15

Leu Ser Lys Leu Leu Lys Phe Leu Thr Val Ser Phe Phe Ala Phe Leu  
 20 25 30

<210> 284  
 <211> 661  
 <212> DNA  
 <213> Homo sapiens

<400> 284  
 ggagtggcag ccggagtctg aactgtcctg ggggaccaag caggagctta agatgggcaa 60  
 gacctggggc cctgggcaga cgcatacaag caggcagaag caggcatggc cagcaggaag 120  
 accaagaaga aggaaggggg tgccctccgg gccagagag cctcatccaa tgtcttctcc 180  
 aactttgagc agactcagat ccaggagttc aaggaggcat tcacactcat ggatcagaac 240  
 cgagatggct tcattgacaa ggaggacctg aaggacacct atgcctccct gggcaagacc 300  
 aacgtcaagg acgacgagct ggacgccatg ctcaaagagg cctcggggcc catcaacttc 360  
 accatgtttc tgaacctgtt tggggagaag ctgagcggta ccgacgccga ggagaccatt 420  
 cttaacgcct tcaagatgct ggacccggac gggaaaggga aaatcaacaa ggagtacatc 480  
 aagcgtctgc tgatgtccca ggctgacaag atgacggcgg aagaggtgga ccagatgttc 540  
 cagttcgcct ccatcgatgt ggcgggcaac ctggactaca aggcgctcag ctacgtgatc 600  
 acccacgggg aggagaagga ggagtgaagc ccagccgggt caataaacct ggacgcttgg 660  
 a 661

<210> 285  
 <211> 173  
 <212> PRT  
 <213> Homo sapiens

<400> 285

Met Ala Ser Arg Lys Thr Lys Lys Lys Glu Gly Gly Ala Leu Arg Ala  
 1 5 10 15

Gln Arg Ala Ser Ser Asn Val Phe Ser Asn Phe Glu Gln Thr Gln Ile  
 20 25 30

Gln Glu Phe Lys Glu Ala Phe Thr Leu Met Asp Gln Asn Arg Asp Gly  
 35 40 45

Phe Ile Asp Lys Glu Asp Leu Lys Asp Thr Tyr Ala Ser Leu Gly Lys  
 50 55 60

Thr Asn Val Lys Asp Asp Glu Leu Asp Ala Met Leu Lys Glu Ala Ser  
 65 70 75 80

Gly Pro Ile Asn Phe Thr Met Phe Leu Asn Leu Phe Gly Glu Lys Leu  
 85 90 95

Ser Gly Thr Asp Ala Glu Glu Thr Ile Leu Asn Ala Phe Lys Met Leu  
 100 105 110

Asp Pro Asp Gly Lys Gly Lys Ile Asn Lys Glu Tyr Ile Lys Arg Leu  
 115 120 125

Leu Met Ser Gln Ala Asp Lys Met Thr Ala Glu Glu Val Asp Gln Met  
 130 135 140

Phe Gln Phe Ala Ser Ile Asp Val Ala Gly Asn Leu Asp Tyr Lys Ala  
 145 150 155 160

Leu Ser Tyr Val Ile Thr His Gly Glu Glu Lys Glu Glu  
 165 170

<210> 286  
 <211> 296  
 <212> DNA  
 <213> Homo sapiens

<400> 286  
tagtgctcaa tgatttttat tttagcaaat tgtagtcatt tccatacatt attttttaca 60  
gtaaacattg ccggatacat ttccatacgt ttttaaagaa tagaggagga ggaagaggag 120  
ggaaaaaaag gaaaataaat aaataaacgt gtggagcaat caactccaga atcacaccaa 180  
tattttctagg tctaattggcc acacagcaaa atcagcctca gttatcccat tgtcttcata 240  
tcttaagacc ccgcgatacct ggccttctcg taagctcccc ggacccgggc gtcctc 296

<210> 287  
<211> 34  
<212> PRT  
<213> Homo sapiens

<400> 287

Met Ala Thr Gln Gln Asn Gln Pro Gln Leu Ser His Cys Leu His Ile  
1 5 10 15

Leu Arg Pro Arg Asp Pro Gly Leu Leu Val Ser Ser Pro Asp Pro Gly  
20 25 30

Val Leu

<210> 288  
<211> 2076  
<212> DNA  
<213> Homo sapiens

<400> 288  
ggcacgagga gcggatgaga tcgtggggct caccagcgtc ccccatggct tctgagtagc 60  
gtgggagtgg agtcagcacc aagccaggct ccccgcgctt gccttgccct cacctgctcc 120  
tgctctctgc cagaggcagc atggtccgca gggcaccatg gggcccgaca gagtgacagc 180  
acgagaactg tgcgagaacg acgacctggc caccagcctc gtcctggacc cctacctcgg 240  
tttccgcacc cataagatga acgtcaggtc tatcgtacc tccgtgcctt cctgccggaa 300  
agtggcttta ccatcctgcc ctgcacgcgc tactccatgg agaccaacgg ggccaagatc 360  
gtgtccactc gtgcttgga aaagaatgag aagctggagc tgctgggtgg ctgcattgca 420  
gagctgcggg aggcagatga ggggctgctg agggccggtg agaatgactt cagcatcatg 480  
tactcaaccc gcaagcggag tgctcagctg tggctgggccc cagccgcctt catcaaccat 540  
gactgcaaac ccaactgcaa gtttgtgcct gcagatggga acgcagcctg cgtgaagggt 600

```

ctccgggaca ttgagcctgg ggacgaggtg acatgcttct acggcgaggg cttcttcggc 660
gagaagaatg agcactgtga atgccacacc tgtgagagga aaggtgaagg agctttccga 720
accaggccta gggagcccg cgttgccacca cggccctgg acaagtacca gctgcgtgag 780
accaagcggc ggctgcagca aggcctggac agtggcagcc gacagggcct gctgggccc 840
cgggcctgcg tgcacccatc cccgctgcg cgggacccat tctgcgccgc ctgccagccc 900
ctgcgcctgc cagcctgcag cggccgccca gacacctcac ccctctggct ccagtggctg 960
cctcagcccc agccccgagt gcggcccg cagcgccgac gccccggcc ccggagggcc 1020
ccagtgtctt ccaccacca cgtgcgccgc gtctccctgc accgatgggg aggctgtggc 1080
ccccactgcc gcctgcgagg agaggccctg gtggccctgg gccagcccc ccacgccgc 1140
tgggccctc agcaggactg gactggggc cggcgctatg ggctgcctta cgtggtgcgt 1200
gtggaccttc gtcgcctggc ccagcccca ccagctacc cagccctgc tgggaccca 1260
ggcccatcc tgatcccgaa gcaggccctc gccttcgcc ccttctccc acccaagcg 1320
ctacggctgg tggtcagcca cggctccatc gacctggatg tcggcggtga agagctgtga 1380
caggccggac ggggaggccc agcagggaga gagggtctct ctctagctg ctaccagga 1440
cctccagaag gagcccttgg acctctggga gggagctgac ccttgactcc agcatagctc 1500
tgaccctgga atggggttgg tttggacacc ccagggatc tgagccctga ccctttgtga 1560
ctgctgaccc ctgagccacc cccactcca cagggagccc cggccatttg ctgccctccc 1620
caccctgcc ccagcctcag gactgcagga gccatccgcc cccctcagcc ccttcctccc 1680
cagggagcaa agccataagg ggcagggggc accccacggc atctccccag aagtacaggc 1740
ctcaggagga ggtggaactg atgtagggg tggcactccc cagagactgc cctcacagg 1800
ggactgggtt cgctctcagc tctgcagctg tctgcgggtg ggggaagggt ggggggtgtc 1860
tgagggcatg tccccctcac cccccccgt gggctctcagg gaggccgggt gtgacctcat 1920
ctttctcatg gtgctatcct ggtgctattg ggggtggggag ctccctcccc tccccacac 1980
cagaaagggg tatgttgggg gcttggaagc acttgaactt tttattttat taaaacctg 2040
ttataagcag caaaaaaaaa aaaaaaaaa aaaaaa 2076

```

```

<210> 289
<211> 346
<212> PRT
<213> Homo sapiens

```

&lt;400&gt; 289

```

Met Glu Thr Asn Gly Ala Lys Ile Val Ser Thr Arg Ala Trp Lys Lys
1          5          10          15

Asn Glu Lys Leu Glu Leu Leu Val Gly Cys Ile Ala Glu Leu Arg Glu
20          25          30

Ala Asp Glu Gly Leu Leu Arg Ala Gly Glu Asn Asp Phe Ser Ile Met
35          40          45

Tyr Ser Thr Arg Lys Arg Ser Ala Gln Leu Trp Leu Gly Pro Ala Ala
50          55          60

Phe Ile Asn His Asp Cys Lys Pro Asn Cys Lys Phe Val Pro Ala Asp
65          70          75          80

Gly Asn Ala Ala Cys Val Lys Val Leu Arg Asp Ile Glu Pro Gly Asp
85          90          95

Glu Val Thr Cys Phe Tyr Gly Glu Gly Phe Phe Gly Glu Lys Asn Glu
100         105         110

His Cys Glu Cys His Thr Cys Glu Arg Lys Gly Glu Gly Ala Phe Arg
115         120         125

Thr Arg Pro Arg Glu Pro Ala Leu Pro Pro Arg Pro Leu Asp Lys Tyr
130         135         140

Gln Leu Arg Glu Thr Lys Arg Arg Leu Gln Gln Gly Leu Asp Ser Gly
145         150         155         160

Ser Arg Gln Gly Leu Leu Gly Pro Arg Ala Cys Val His Pro Ser Pro
165         170         175

Leu Arg Arg Asp Pro Phe Cys Ala Ala Cys Gln Pro Leu Arg Leu Pro
180         185         190

Ala Cys Ser Ala Arg Pro Asp Thr Ser Pro Leu Trp Leu Gln Trp Leu
195         200         205

Pro Gln Pro Gln Pro Arg Val Arg Pro Arg Lys Arg Arg Arg Pro Arg
210         215         220

```

Pro Arg Arg Ala Pro Val Leu Ser Thr His His Ala Ala Arg Val Ser  
225 230 235 240

Leu His Arg Trp Gly Gly Cys Gly Pro His Cys Arg Leu Arg Gly Glu  
245 250 255

Ala Leu Val Ala Leu Gly Gln Pro Pro His Ala Arg Trp Ala Pro Gln  
260 265 270

Gln Asp Trp His Trp Ala Arg Arg Tyr Gly Leu Pro Tyr Val Val Arg  
275 280 285

Val Asp Leu Arg Arg Leu Ala Pro Ala Pro Pro Ala Thr Pro Ala Pro  
290 295 300

Ala Gly Thr Pro Gly Pro Ile Leu Ile Pro Lys Gln Ala Leu Ala Phe  
305 310 315 320

Ala Pro Phe Ser Pro Pro Lys Arg Leu Arg Leu Val Val Ser His Ser  
325 330 335

Ile Asp Leu Asp Val Gly Gly Glu Glu Leu  
340 345

<210> 290  
<211> 377  
<212> DNA  
<213> Homo sapiens

<400> 290  
ctactactac tactaaattc gcggccgcgt cgactttttt tttttttttt agagatgggg 60  
tctcgctcag tcaccaggc tagagtcaa tgacacgaca tagctcactg tagcctcgga 120  
ctcctgggct caagcaatcc tcccacctca gcctctggag tagctgggac cacaggtgca 180  
agctactatg cctgtctcta ttatacctta catacatttt cacagttgtc tatttcctta 240  
ttatcatttg tctcttctta ctgtgttcac tgtaccact tgttttaa atattttatc 300  
ctcgcttat tccaaagtct ttatcggttt tatagattgc atttaaaatc tgatattttg 360  
acgtcgacgc ggccgcg 377

<210> 291  
<211> 673



<212> PRT  
 <213> Homo sapiens

<220>  
 <221> MISC\_FEATURE  
 <222> (1)..(673)  
 <223> X = unknown

<400> 291

Gly	Trp	Val	Trp	Trp	Leu	Thr	Pro	Val	Ile	Pro	Ala	Leu	Trp	Glu	Thr	1	5	10	15
Arg	Arg	Ala	Asp	His	Leu	Arg	Ser	Gly	Val	Xaa	Asp	Gln	Pro	Asp	Gln	20	25	30	
His	Gly	Glu	Thr	Val	Ser	Leu	Leu	Lys	Ile	His	Lys	Leu	Ala	Arg	Asn	35	40	45	
Gly	Gly	Pro	Cys	Leu	Xaa	Ser	Gln	Leu	His	Gly	Arg	Gln	Arg	Gln	Glu	50	55	60	
Asn	Arg	Leu	Asn	Pro	Gly	Gly	Xaa	Gly	Cys	Ser	Glu	Pro	Lys	Leu	Ala	65	70	75	80
Thr	Ala	Leu	Gln	Pro	Gly	Cys	Gln	Ser	Lys	Gly	Leu	Ser	Gln	Lys	Gln	85	90	95	
Lys	Gln	Ser	Lys	Lys	Lys	Lys	Lys	Lys	Thr	Pro	Lys	Asn	Lys	Xaa	Xaa	100	105	110	
Xaa	Ala	Gly	Cys	Gly	Gly	Ser	Arg	Leu	Ser	Ser	Gln	His	Phe	Gly	Arg	115	120	125	
Pro	Gly	Gly	Gln	Ile	Thr	Xaa	Gly	Gln	Glu	Phe	Glu	Thr	Ser	Leu	Ile	130	135	140	
Asn	Met	Val	Lys	Leu	Cys	Leu	Tyr	Xaa	Lys	Tyr	Ile	Asn	Xaa	Pro	Gly	145	150	155	160
Met	Ala	Ala	His	Ala	Cys	Asn	Pro	Ser	Tyr	Thr	Gly	Asp	Arg	Gly	Arg	165	170	175	
Arg	Ile	Ala	Xaa	Thr	Gln	Glu	Val	Glu	Ala	Ala	Val	Ser	Gln	Asn	Leu				

180	185	190	
Pro Leu His Ser Ser Arg Gly Val Arg Ala Arg Ala Tyr Leu Lys Asn			
195	200	205	
Lys Asn Lys Ala Lys Lys Lys Lys Lys Lys Pro Pro Lys Thr Lys Xaa			
210	215	220	
Xaa Xaa Leu Gly Val Val Ala His Ala Cys His Pro Ser Thr Leu Gly			
225	230	235	240
Asp Gln Glu Gly Arg Ser Leu Glu Val Arg Ser Leu Arg Pro Ala Xaa			
245	250	255	
Ser Thr Trp Xaa Asn Cys Val Ser Ile Lys Asn Thr Xaa Ile Ser Gln			
260	265	270	
Glu Trp Arg Pro Met Pro Val Ile Pro Ala Thr Arg Glu Thr Glu Ala			
275	280	285	
Gly Glu Ser Leu Glu Pro Arg Arg Leu Arg Leu Gln Xaa Ala Lys Thr			
290	295	300	
Cys His Cys Thr Pro Ala Gly Val Ser Glu Gln Gly Pro Ile Ser Lys			
305	310	315	320
Thr Lys Thr Lys Gln Lys Lys Lys Lys Lys Asn Pro Gln Lys Gln Xaa			
325	330	335	
Xaa Xaa Phe Cys Phe Trp Gly Phe Phe Phe Phe Phe Phe Cys Phe Val			
340	345	350	
Phe Val Phe Glu Ile Gly Pro Cys Ser Asp Thr Pro Ala Gly Val Gln			
355	360	365	
Trp Gln Val Leu Ala His Cys Ser Leu Asn Leu Leu Gly Ser Ser Asp			
370	375	380	
Ser Pro Ala Ser Val Ser Arg Val Ala Gly Ile Thr Gly Met Gly Arg			
385	390	395	400
His Ser Trp Leu Ile Tyr Val Phe Leu Ile Glu Thr Gln Phe His His			







					405					410					415
Val	Asp	Gln	Ala	Gly	Leu	Lys	Leu	Leu	Thr	Ser	Ser	Asp	Leu	Pro	Ser
			420					425					430		
Trp	Ser	Pro	Lys	Val	Leu	Gly	Xaa	Gln	Ala	Xaa	Ala	Thr	Thr	Pro	Ser
		435					440					445			
Xaa	Xaa	Xaa	Phe	Val	Phe	Gly	Gly	Phe	Phe	Phe	Phe	Phe	Phe	Ala	Leu
	450					455					460				
Phe	Leu	Phe	Leu	Arg	Xaa	Ala	Leu	Ala	Leu	Thr	Pro	Arg	Leu	Glu	Cys
465					470					475				480	
Ser	Gly	Lys	Phe	Trp	Leu	Thr	Ala	Ala	Ser	Thr	Ser	Trp	Val	Gln	Ala
				485					490					495	
Ile	Leu	Leu	Pro	Leu	Ser	Pro	Val	Xaa	Leu	Gly	Leu	Gln	Ala	Trp	Ala
			500					505					510		
Ala	Ile	Pro	Gly	Xaa	Phe	Met	Tyr	Phe	Xaa	Xaa	Arg	His	Ser	Phe	Thr
		515					520					525			
Met	Leu	Ile	Arg	Leu	Val	Ser	Asn	Ser	Xaa	Pro	Gln	Val	Ile	Cys	Pro
	530					535					540				
Pro	Gly	Leu	Pro	Lys	Cys	Trp	Asp	Asp	Arg	Arg	Glu	Pro	Pro	His	Pro
545					550					555					560
Ala	Xaa	Xaa	Xaa	Leu	Phe	Leu	Gly	Val	Phe	Phe	Phe	Phe	Phe	Leu	Leu
				565					570					575	
Cys	Phe	Cys	Phe	Xaa	Asp	Arg	Pro	Leu	Leu	Xaa	His	Pro	Gly	Trp	Ser
			580					585					590		
Ala	Val	Ala	Ser	Phe	Gly	Ser	Leu	Gln	Pro	Gln	Pro	Pro	Gly	Phe	Lys
		595					600					605			
Arg	Phe	Ser	Cys	Leu	Cys	Leu	Pro	Cys	Ser	Trp	Asp	Tyr	Arg	His	Gly
	610					615					620				
Pro	Pro	Phe	Leu	Ala	Asn	Leu	Cys	Ile	Phe	Asn	Arg	Asp	Thr	Val	Ser

625                                      630                                      635                                      640

Pro Cys Xaa Ser Gly Trp Ser Gln Thr Pro Asp Leu Lys Xaa Ser Ala  
645                                      650                                      655

Leu Leu Val Ser Gln Ser Ala Gly Met Thr Gly Val Ser His His Thr  
660                                      665                                      670

Gln

<210> 292  
<211> 125  
<212> DNA  
<213> Homo sapiens

<400> 292  
gcggccgcct actactacta tacggctgcg agaagacgac agaagggcga aaaactcact 60  
ctacctcctt gaagggagtg caaggaaagt tgtcttgatg ccaggtaaaa caaaaaaaaa 120  
aaaaa 125

<210> 293  
<211> 33  
<212> PRT  
<213> Homo sapiens

<400> 293  
Leu Arg Glu Asp Asp Arg Arg Ala Lys Asn Ser Leu Tyr Leu Leu Glu  
1                                      5                                      10                                      15

Gly Ser Ala Arg Lys Val Val Leu Met Pro Gly Lys Thr Lys Lys Lys  
20                                      25                                      30

Lys

<210> 294  
<211> 854  
<212> DNA  
<213> Homo sapiens

<400> 294  
cccggatccc tgcggctgcc tgcactctgg accacgagct ctgagagcag caggttgagg 60  
gccggtgggc agcagctcgg aggctccgag aggtgcagga gacgcaggca tggccggtga 120

```

gctgactcct gaggaggagg cccagtacaa aaaggctttc tccgcggttg acacggatgg      180
aaacggcacc atcaatgccc aggagctggg cgcggcgctg aaggccacgg gcaagaacct      240
ctcggaggcc cagctaagga aactcatctc cgaggttgac agcgacggcg acggcgaaat      300
cagcttccag gagttcctga cggcggcaag gaagggcagg gccggcctgg aggacctgca      360
ggtcgccttc cgcgccttcg accaggatgg cgacggccac atcaccgtgg acgagctcag      420
gcggggccatg gcggggctgg ggcagccgct gccgcaggag gagctggacg ccatgatccg      480
cgaggccgac gtggaccagg acggggcgggt gaactacgag gagttcgcga ggatgctcgc      540
ccaggagtga ggctccccgc ctgtgtcccc ctggtgcgcg tctgagcctt caggggccacc      600
gcccgctgct gcttttgtgc tgggactctc cggggaaacc tggtcggtgg atgggaaact      660
gcctccccct gggaggaagg ctttgcgctc cggggcctgg atgcggcgcc ctcgggccgc      720
ctgcgagccc ctctctgcct tcagaccttg ggcagaagga ggctccttg ggcttggtcc      780
ccctttgccc tgcagtggaa tgagggcccc ttaacccgcg attgatctaa ataaaggact      840
gccgagttcc aaaa                                                    854

```

<210> 295  
 <211> 146  
 <212> PRT  
 <213> Homo sapiens

<400> 295

```

Met Ala Gly Glu Leu Thr Pro Glu Glu Glu Ala Gln Tyr Lys Lys Ala
1              5              10              15

```

```

Phe Ser Ala Val Asp Thr Asp Gly Asn Gly Thr Ile Asn Ala Gln Glu
              20              25              30

```

```

Leu Gly Ala Ala Leu Lys Ala Thr Gly Lys Asn Leu Ser Glu Ala Gln
35              40              45

```

```

Leu Arg Lys Leu Ile Ser Glu Val Asp Ser Asp Gly Asp Gly Glu Ile
50              55              60

```

```

Ser Phe Gln Glu Phe Leu Thr Ala Ala Arg Lys Ala Arg Ala Gly Leu
65              70              75              80

```

```

Glu Asp Leu Gln Val Ala Phe Arg Ala Phe Asp Gln Asp Gly Asp Gly
85              90              95

```



His Ile Thr Val Asp Glu Leu Arg Arg Ala Met Ala Gly Leu Gly Gln  
                   100                  105                  110

Pro Leu Pro Gln Glu Glu Leu Asp Ala Met Ile Arg Glu Ala Asp Val  
           115                  120                  125

Asp Gln Asp Gly Arg Val Asn Tyr Glu Glu Phe Ala Arg Met Leu Ala  
       130                  135                  140

Gln Glu  
 145

<210> 296  
 <211> 154  
 <212> DNA  
 <213> Homo sapiens

<400> 296  
 cgagaagacg acagaagggc aacatttgag ctgattctta aaaaaaaaaa aaaaaaata 60  
 gagatacacg agaaatccaa attaggatag aattccagaa gaaggagta gcatgtgcaa 120  
 aaaaaaaaaa aaaaaaaaaa aaaagtcgta tcga 154

<210> 297  
 <211> 29  
 <212> PRT  
 <213> Homo sapiens

<400> 297

Arg Glu Asp Asp Arg Arg Ala Thr Phe Glu Leu Ile Leu Lys Lys Lys  
 1                  5                  10                  15

Lys Lys Lys Ile Glu Ile His Glu Lys Ser Lys Leu Gly  
           20                  25

<210> 298  
 <211> 452  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)..(452)  
 <223> n = unknown

<400> 298  
 tttttgcctg agatcagggtc tcaactggagt acagtgggtg cgtttgggtt cactgcaacc 60  
 tcttacctcc cctccaactt ggcctcctgg gtagctaaga ctacagggtac acgccaccgt 120  
 gccagctag tttcttttat ttttggtaga gtcagggttt cgccttggtg cccagatag 180  
 tcttgaactc ctga'gttcta gccatccacc cgcctctggc ccctcaaagt gctgggatta 240  
 taggcgtcac ccaccacgcc cagccagagt aagccttttg tgtgtttatc anaticanccc 300  
 ccnctncnna atatgttata ctgttgcgag tgacagaaga ggaaacagcc acagaaaggt 360  
 aattgctcaa ggctgcagag ttaagtgcta gagctggatt caaatccagg cagtccagct 420  
 acagaacact gctgctgtgc gctcgggatg gg 452

<210> 299  
 <211> 375  
 <212> PRT  
 <213> Homo sapiens

<400> 299  
 Met Glu Phe Ser Leu Leu Leu Pro Arg Leu Glu Cys Asn Gly Ala Ile  
 1 5 10 15  
 Ser Ala His Arg Asn Leu Arg Leu Pro Gly Ser Ser Asp Ser Pro Ala  
 20 25 30  
 Ser Ala Ser Pro Val Ala Gly Ile Thr Gly Met Cys Thr His Ala Arg  
 35 40 45  
 Leu Ile Leu Tyr Phe Phe Leu Val Glu Met Glu Phe Leu His Val Gly  
 50 55 60  
 Gln Ala Gly Leu Glu Leu Pro Thr Ser Asp Asp Pro Ser Val Ser Ala  
 65 70 75 80  
 Ser Gln Ser Ala Arg Tyr Arg Thr Gly His His Ala Arg Leu Cys Leu  
 85 90 95  
 Ala Asn Phe Cys Gly Arg Asn Arg Val Ser Leu Met Cys Pro Ser Trp  
 100 105 110  
 Ser Pro Glu Leu Lys Gln Ser Thr Cys Leu Ser Leu Pro Lys Cys Trp  
 115 120 125

Asp Tyr Arg Arg Ala Ala Val Pro Gly Leu Phe Ile Leu Phe Phe Leu  
 130 135 140

Arg His Arg Cys Pro Thr Leu Thr Gln Asp Glu Val Gln Trp Cys Asp  
 145 150 155 160

His Ser Ser Leu Gln Pro Ser Thr Pro Glu Ile Lys His Pro Pro Ala  
 165 170 175

Ser Ala Ser Gln Val Ala Gly Thr Lys Asp Met His His Tyr Thr Trp  
 180 185 190

Leu Ile Phe Ile Phe Ile Phe Asn Phe Leu Arg Gln Ser Leu Asn Ser  
 195 200 205

Val Thr Gln Ala Gly Val Gln Trp Arg Asn Leu Gly Ser Leu Gln Pro  
 210 215 220

Leu Pro Pro Gly Phe Lys Leu Phe Ser Cys Pro Ser Leu Leu Ser Ser  
 225 230 235 240

Trp Asp Tyr Arg Arg Pro Pro Arg Leu Ala Asn Phe Phe Val Phe Leu  
 245 250 255

Val Glu Met Gly Phe Thr Met Phe Ala Arg Leu Ile Leu Ile Ser Gly  
 260 265 270

Pro Cys Asp Leu Pro Ala Ser Ala Ser Gln Ser Ala Gly Ile Thr Gly  
 275 280 285

Val Ser His His Ala Arg Leu Ile Phe Asn Phe Cys Leu Phe Glu Met  
 290 295 300

Glu Ser His Ser Val Thr Gln Ala Gly Val Gln Trp Pro Asn Leu Gly  
 305 310 315 320

Ser Leu Gln Pro Leu Pro Pro Gly Leu Lys Arg Phe Ser Cys Leu Ser  
 325 330 335

Leu Pro Ser Ser Trp Asp Tyr Gly His Leu Pro Pro His Pro Ala Asn  
 340 345 350

Phe Cys Ile Phe Ile Arg Gly Gly Val Ser Pro Tyr Leu Ser Gly Trp  
 355 360 365

Ser Gln Thr Pro Asp Leu Arg  
 370 375

<210> 300  
 <211> 496  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> n = unknown

<400> 300  
 tgaagaactc ngtttaaatga catatatctg acatgttctg tggagccaga attcaaaacc 60  
 cagatacgca ggaggacaca ttcttgatcg gtattttatt ctattatatt tattagttcc 120  
 aatccttatg actctgttta aaatgagtat ctgcattatt gtgcaaacac ttctgagatc 180  
 tcatcacata cctgatccca ttttaacttca gtctatccct ccattacttt ttgtggaaag 240  
 tgctatctaa gttggagggt ctgcttgagt attcttaatt tttcttcttt ttaatgcata 300  
 cggtggtcaa agtaaatagc taacatattg gcatcaaacc attgcctatt gaagcaagct 360  
 ttgaatgaaa ttggtttgtc attgaccact gtgagaaact catttgtaaa gataatactg 420  
 aaaaacatcc tgactcttat gtatgcttgc ctgtctctga actccacctc tatcagcata 480  
 ctcaatacat tgcctc 496

<210> 301  
 <211> 56  
 <212> PRT  
 <213> Homo sapiens

<400> 301

Leu Ala Ser Asn His Cys Leu Leu Lys Gln Ala Leu Asn Glu Ile Gly  
 1 5 10 15

Leu Ser Leu Thr Thr Val Arg Asn Ser Phe Val Lys Ile Ile Leu Lys  
 20 25 30

Asn Ile Leu Thr Leu Met Tyr Ala Cys Leu Ser Leu Asn Ser Thr Ser  
 35 40 45

Ile Ser Ile Leu Asn Thr Leu Pro  
50 55

<210> 302  
<211> 456  
<212> DNA  
<213> Homo sapiens

<400> 302  
ttaaactctt agaatccaag tgactcatct gtgtgcttga atcctttcca ctgtctcatc 60  
tccctcatcc aagtttctag taccttctct ttgttgtaga ggataatcaa actgaacaac 120  
aaaaagttta ctctcctcat ttggaacctt aaaactctct tcttcctggg tctgagggct 180  
ccaagaatcc ttgaatcagt tctcagatca ttgtggacac cagatcagga acctcaggca 240  
cgtgggaaag gccagataat taggagggat gctgaagaga aagcccgatg accacagcac 300  
ggatgatggt taaaggcctt gaaatttggg taccatcatt cccaaccca ccaaccgccc 360  
atgggtagca ttcaccagca cgactggca gccgcagcca cccgttctct ttccttgcat 420  
tgctgagcaa gtttcccata tcattcagtt aggctc 456

<210> 303  
<211> 43  
<212> PRT  
<213> Homo sapiens

<400> 303

Leu Val Thr Ile Ile Pro Gln Pro Thr Asn Arg Pro Trp Val Ala Phe  
1 5 10 15

Thr Ser Thr His Trp Gln Pro Gln Pro Pro Val Leu Phe Pro Cys Ile  
20 25 30

Ala Glu Gln Val Ser His Ile Ile Gln Leu Gly  
35 40

<210> 304  
<211> 354  
<212> DNA  
<213> Homo sapiens

<400> 304  
tttctattga tgcaaacagg ctgttgccca aagcaggggt taatactccc caccctagaa 60  
agtgcacat cctcctccag cctacttcc catgcaatgt ataagcatt gtacaaagga 120

acacacagggc acacacaaac ttacacacat gcttttttct tggatgaaga ttcttacaca 180  
 ccaacagtga gttcttcgaa aattacaatc taactgtata tcctggaata taagtggagc 240  
 cacactacag accaaactga ggtccaggac ctgtactttt tgtacaatag aaccagctc 300  
 ttctactgtt ctgcagccag cagatggcag atctctgagc agaactgctt ttgg 354

<210> 305  
 <211> 67  
 <212> PRT  
 <213> Homo sapiens

<400> 305

Met Gln Thr Gly Cys Cys Leu Lys Gln Gly Leu Ile Leu Pro Thr Leu  
 1 5 10 15

Glu Ser Asp Thr Ser Ser Ser Ser Pro Thr Ser His Ala Met Tyr Lys  
 20 25 30

His Leu Tyr Lys Gly Thr His Arg His Thr Gln Thr Tyr Thr His Ala  
 35 40 45

Phe Phe Leu Asp Glu Asp Ser Tyr Thr Pro Thr Val Ser Ser Ser Lys  
 50 55 60

Ile Thr Ile  
 65

<210> 306  
 <211> 3892  
 <212> DNA  
 <213> Homo sapiens

<400> 306  
 aaacaaactg agacaaaatg ggaatacaac aatgtgggca ttgacttgct ccctgagccc 60  
 aaaagcttca attaccatt gctctcgtcc ccagggtgatc agcttgaaat tcagctaacc 120  
 gaggagctac ggtccctcat cccaacgag gatgtgagaa agttcatgtc tcatgttata 180  
 tggaccttga aaatggaatg ttcagaaaca catgtgcaag ggagctgtgc caagctcatg 240  
 tcgcgaacag gcctcctgat gaagcttctc agcgagcagc aggaagcaaa ggcaattgaat 300  
 gtagaatggg atacggacca acaaaaaaca aattatatta atgagaacat ggaacagaat 360  
 gaacagaaag agcagaagtc aagtgagctc atgaaagaag ttccaggata tgactataag 420

aacaaactca tcttcgcaat atctgtgact gtcatactaa taattttgat tataatTTTT	480
tgttttatag aggtaaagac aataattaat tcagggttttc aaaatacaat cctgtgtttg	540
tgtggattca gaatccacaa actgaaaacc aacgtcactt tcccacttga cattcttctt	600
ctgtcattta aggctgaggt gtgctttgtt cttttactgc aatgtatatt ccaggattgt	660
taaaggatcc tcgcttccag gaggtctctg tgaaataaaa ccaagttaat ccactagac	720
tattttaaga agttaagttg atataatagc aaaatttctc ccacccaaaa ctatgtcaac	780
aattggatgt actcactgag tcaccctta ctctgccact aattttatttc cttgttgctt	840
aaatgatgag agacataata tctccaccct cacggagttg tcatcaccct ggagaggaag	900
aagacagcca aaagagagaa gtattgtctt gtagacttac tagattcaca tagtatcatc	960
cttctccagt gtgtaagggt ttgtctaaat aggtccagtt .aaagaactac agggtagcca	1020
tttttaaaaa aaaatttttg ccacgttttc aaattcacag gggaggggga atgtctcata	1080
ctccagccct cctgagccta ggccctctgt gagatgtgtc accatttctt ggacaccata	1140
tgagacattc cccctcgat tagagatgct caacctgcat caacaaatct aaagcctgca	1200
tctggctacc ctggggcgag tccgttttac agtgccatt cctggagctc gcctcttttt	1260
gccttttgtt tgattatgtg atgtattact tttcccagca ggccagtgtc agcatactgg	1320
aagagggatt taataagctg gcacccttga tgctatgtc ctaatccaac cttatttgcc	1380
tcattggcca tttccattat ggtggcagcc ctccattcca gccacagcag cccctcagcg	1440
tccccagtc aactgtccc cattgtgtc catctgtgcc tttgtccatc tacaatgccc	1500
ttatttact ctgcctgtgg gagtcctgtg aatctctcca aagccaactc agttcatctt	1560
tctgcttgaa acctccctg aataggccag gtgcggtggc tcacgcctgt aatcccagca	1620
ctttgggagg ccaaggcagg cggatcacia ggtcaggaga tcgagaccat cctggctaac	1680
acagaccatt ctctactaaa aatgcaaaaa attagctggg tgtggtggcg ggcgtgtgtc	1740
gtcccagcta cttgtgaggc tgaagcagga aaatggcatg aacctgggag gtggagcatg	1800
cagccagcca agatcgggcc gctgcactcc agcctggggg acagagcgag actctgcctc	1860
aaaaaaaaa aaaaaaagaa acttccctga atattccagc cctcctgagc ctagtccctt	1920
tgtgagattt gtccccattt cttggacacc atataagaga cttcagaggc tgaagtggga	1980
ggattgcttg agcctgggag gtcgaggatg cagtgagctg tggtcatacc actgcactct	2040
agcctgggca acagagcgag accttgtctc aaaaacagcc accaccaaaa actatcttgg	2100

gatttgaata ggattacctt aaatttgtag attaatttga gaattgacat ctgtacgaca 2160  
 ttctagaaca tggatatttca tgtcatgtat tcatttcttg ttaatgtctt tcagaagagt 2220  
 tttagggttt ccatcatata gatcttacac gtcttttgtt agataacaga tctttgtatt 2280  
 tttgttccta aatacttcag acatttgtat tgccattgta aatgggatct ttcttccatt 2340  
 ttctagttag ttattggtgg tacatctgaa aagcatttga ggtttgtgtg ctgctctctt 2400  
 gattttgttt ctagccaccg tactgaattc tcatattact tccagtaaaa tcttagttga 2460  
 ttctcttagg cttctttggc taacatttat tattttatat gcaaataatt atagttttgt 2520  
 ctcttccttt tcaataactta cactctttcc ttcttttctt ttcttttttt tttctttctc 2580  
 agggccttgt tgtcaccocag actggagagc aatgggtgtga tctagctcgc tgtaacctca 2640  
 aactcctggg cttaggggat cctcctgcct cggttctctg agtggctggg actacaggca 2700  
 ggagtgat tttaaaactt ttgggtgtaga gacaagatct tgctatgttg cccaggctgg 2760  
 ttttctgcc acttttagagc aggtttcctt tttttcatac ttttaagagg tttttattag 2820  
 gaattgtcca ttgaatgtta gctaaaacag tcaataaaat gcgttaagta ccagctacat 2880  
 gcaagaccct aagttagata cagtcagccc tcttcatcag cagggtccaca tcttcagatt 2940  
 caactagata aggctgaata tttgaagaaa aaaacaataa aaatacaatt agaaaagtaca 3000  
 gtataacaac tggtgccatg atacaatatc tatacatttt attagtgatg acctaaagtt 3060  
 catgggacca ggcacggtga ctcacacttg taatcccaac actttgggag gccagcctgg 3120  
 gcagcatagt gagaccttgt ctttaataaa aataaaaata aaaaaattag ctagtgttgt 3180  
 ggtatgcacc tgtagtccca gctactcaag aggttgaggt gggcagatca ctggagccca 3240  
 ggaggttgcg gctgctgtga gctgtgattg tgacactgct ctccagcctg agtgacagag 3300  
 ggtgatcctg tctctaagta agtaaaataa taaagtatat gggggggatg tgtgttggtt 3360  
 atatgcaaac actgcaccat tatacgtaag ggattgagca tccacagatt ctggtatggt 3420  
 gtggaggcga tatcctagaa ccagtcgtct gcaaggtagc aaggatgact gaactgtgga 3480  
 agaatcaaag cactgttaaa cagcatacaa ttctgtctt caaaaaagtt atctcatcgg 3540  
 gtagatgaga cttaaaatga ataaaaggaa tgaatacaca ttggagatag tggttgttgt 3600  
 gatagataac cttaattgtg ttttcttcca aaacgggtga attcacataa aagggcacatca 3660  
 gaaaaataca aagacaacc atcaatatca ggagcctgag catgagttaa agcatgtgga 3720  
 tggcctagag ccatgttttt aaaattgtta ttaaattattg gttttttact taaatcaatg 3780



aaaactttct ttactttgtg gttgtgttcc tcaaaatgag aatttttaac aataataaaa 3840  
 ataaagctta ttagatcaaa aaaaaaaaaa aaaagaaaaa aaaaaaaaaa aa 3892

<210> 307  
 <211> 220  
 <212> PRT  
 <213> Homo sapiens

<400> 307

Lys Gln Thr Glu Thr Lys Trp Glu Tyr Asn Asn Val Gly Ile Asp Leu  
 1 5 10 15

Ser Pro Glu Pro Lys Ser Phe Asn Tyr Pro Leu Leu Ser Ser Pro Gly  
 20 25 30

Asp Gln Leu Glu Ile Gln Leu Thr Glu Gln Leu Arg Ser Leu Ile Pro  
 35 40 45

Asn Glu Asp Val Arg Lys Phe Met Ser His Val Ile Trp Thr Leu Lys  
 50 55 60

Met Glu Cys Ser Glu Thr His Val Gln Gly Ser Cys Ala Lys Leu Met  
 65 70 75 80

Ser Arg Thr Gly Leu Leu Met Lys Leu Leu Ser Glu Gln Gln Glu Ala  
 85 90 95

Lys Ala Leu Asn Val Glu Trp Asp Thr Asp Gln Gln Lys Thr Asn Tyr  
 100 105 110

Ile Asn Glu Asn Met Glu Gln Asn Glu Gln Lys Glu Gln Lys Ser Ser  
 115 120 125

Glu Leu Met Lys Glu Val Pro Gly Tyr Asp Tyr Lys Asn Lys Leu Ile  
 130 135 140

Phe Ala Ile Ser Val Thr Val Ile Leu Ile Ile Leu Ile Ile Ile Phe  
 145 150 155 160

Cys Phe Ile Glu Val Lys Thr Ile Ile Asn Ser Gly Phe Gln Asn Thr  
 165 170 175

Ile Leu Cys Leu Cys Gly Phe Arg Ile His Lys Leu Lys Thr Asn Val  
 180 185 190

Thr Phe Pro Leu Asp Ile Leu Leu Ser Phe Lys Ala Glu Val Cys  
 195 200 205

Phe Val Leu Leu Leu Gln Cys Ile Phe Gln Asp Cys  
 210 215 220

<210> 308  
 <211> 2492  
 <212> DNA  
 <213> Homo sapiens

<400> 308  
 atatatgctg taataattta agtaaaatta ccttcttttg tggaaatgta gaacagctgc 60  
 tcaactgaaat ggatatttct tcatatcctt gaaaactggt gagtcaccct tagtattctc 120  
 ttcttagata taataagttc taatttttcc ttacttggct catttttaac ccttttatct 180  
 ttttattatt ctgaaatctc tccaaggccc tcacatgtcc tcaagttgta gagtcttaaa 240  
 ttggacaaca ctttaattac agcctgaagg ttaggtagtt gttattccat ttatatatct 300  
 tagtatttga gtttactttt gaaatataaa gtcttagtga ctaatttagc atgtggttct 360  
 ctgccactcc cttcctgacc acccaccacc cctcattctt atcttctttt tttaccttgt 420  
 ttgtacaaaa accagttggt gcctatttta tttcttctgt ccataccctg tctgtctatg 480  
 catttaaaaa cagagaactc attccttata aaacagacaa accagggata attgtcaaca 540  
 tcaaaaaaga attctttaaa tcaactgcagg cttcctttaa ataggtgttt cctgtggtgg 600  
 ttttaagtgt ttttatatag gtcatcaact gcttgatata aagaaactaa agataaaggg 660  
 ttaagaggca gtgccagttg aagaacagtt agaaattggg ataaaacagt agttcttagg 720  
 taaacagtaa aatacattca gattcacaga aaaaaatat gtatatatat attttttgag 780  
 atggagtctc acagtgttgt ccaggctgga gtgcagtggc gtgatctcag ctcaactgcaa 840  
 tctctgcctc ccgggttcaa gcgatcctcc tgcctcagct tcccagtag ctgggactac 900  
 aagcgtggca ccaccatacc cggctaattt ttgtattttt agtagagacg gggtttcacc 960  
 acgttggcca ggctggtttc gaactcctga gctcaagtga tctgcctgcc tcggcctccc 1020  
 aaagtgctgg gattacaggt gtaagccact gtacctggcc tgatttatgt attacttttc 1080  
 aagagaatgt tataccaata atattttttg tctagataca gtgaactttt catcatctgt 1140

actaatggag gcatgtacat ttttaattttg ttatgcattt ttgttgtaac atttaaatat 1200  
 agggatgtct aatcataaaa tttaaaaata tttcataatt tcatcatact gaagactcag 1260  
 gaagatctga aaagaaacag aaagagtacc agacctggaa tagaaacctg acttctaaaa 1320  
 ttggctatat agctagctat aggaccttag ttgaattgct tcaccatttt aggcotgttt 1380  
 totgaactat acaatgaggg atttcgacta aatgagggat tttgaccaa tgatctctga 1440  
 ggtatcttaa atctctagct ttttatgatt tcccaccctt gccaaaggagt tgagtaaaca 1500  
 ttggaggtga tgccaccaa aaagtgaag cacaattttt cctttatatg atggagtgtg 1560  
 ctgtagtgta gttttctctt tcagaaatga acgattatcc tgattagatt ttgtttgcc 1620  
 acatcctgtt atatcaagtc atgagtatac cccattgaa actcagagtt gatttggttt 1680  
 acagttgttc taattgtatc ctaagtcctc tagctaaaat tttaaaatga agtagtcacc 1740  
 ccatggcggtt atttatttat tttttgagag ggaatcttgc tctgtcgctc aggccagagt 1800  
 gcagtgggtgt gatcttggct cactgcaacc tgtgcctccc gggttcgagc gattctcctg 1860  
 cctcagcctc cagagtagct gggactacag gggcatgcca ccacgcccg ctaatttttg 1920  
 tatttttagt agaagcgggg tttcaccata ttggccaggc tgggtctcaa ctctgaccg 1980  
 tatgatctgc ccacctcgac ctcccaaagt gctgggattg attacagggtg tgagccacta 2040  
 cgcccagccc ccatggagct atttttattt aaaacacata cattataact ctattgatct 2100  
 gattacaaaa gtgcctattt tgttaaaatg ttttattgtg ataaaaattc aaaaattatt 2160  
 aatgttagcc aacaaaattc aagcaaaaca taaatgtgta aagtaaaaag tgaaagattt 2220  
 ttccttagtc cctctacca ctccattct ccaagaataa cttaattttg tgtgtgtctt 2280  
 cccagatgtt gttctgtttg tgtttatata ttaatataca catatataca tatatgaata 2340  
 cccacacatt tgtatatagg ttttttttaa atgaaatggg atattatatg tactgttttg 2400  
 caactttttt cactttgcat tgtattctgg acctcctctt gcattaatac atggaaattt 2460  
 acctcattta aaaaatgact gcataacatt tc 2492

<210> 309  
 <211> 103  
 <212> PRT  
 <213> Homo sapiens

<400> 309

Met Pro Pro Arg Pro Ala Asn Phe Cys Ile Phe Ser Arg Ser Gly Val  
 1 5 10 15

Ser Pro Tyr Trp Pro Gly Trp Ser Gln Thr Pro Asp Arg Met Ile Cys  
20 25 30

Pro Pro Arg Pro Pro Lys Val Leu Gly Leu Ile Thr Gly Val Ser His  
35 40 45

Tyr Ala Gln Pro Pro Trp Ser Tyr Phe Tyr Leu Lys His Ile His Tyr  
50 55 60

Asn Ser Ile Asp Leu Ile Thr Lys Val Pro Ile Leu Leu Lys Cys Phe  
65 70 75 80

Ile Val Ile Lys Ile Gln Lys Leu Leu Met Leu Ala Asn Lys Ile Gln  
85 90 95

Ala Lys His Lys Cys Val Lys  
100

<210> 310  
<211> 2985  
<212> DNA  
<213> Homo sapiens

<400> 310  
ctaaagcaga ccgcgggtta ggggcttcat ctctctgcgt tctcagttgt gggaggcctt 60  
ggtgattcgg ccacagcctc agcctccgtc gctctgtgac ctgcgggtat tggatgattg 120  
gtagctaaga ctcccgaata cttcagaagt ggggaaatgg aactcttaac attcagggat 180  
gtggccatag aattctctcc agaagagtgg aaatgcctgg accctgacca gcagaatttg 240  
tatagagatg tgatgttgga gaactacagg aacctgggtct ccctgggtgt tgctatctct 300  
aaccagacc tggtcacctg tctggagcaa agaaaagagc cctacaatgt gaagatacat 360  
aagatcgtag ccagaccccc agctatgtgt tctcatttca cccaagacca ttggccagtg 420  
cagggcatag aagattcatt ccacaaactt atactgagaa gatatgagaa atgtggacat 480  
gataatttac aattaagaaa aggctgtaaa agtttgaatg agtgtaagtt gcagaaagga 540  
ggttataatg aatttaatat atgcttgtca actaccaga gcaaaatact tcagtgtaaa 600  
gcaagtgtca aagttgttag taaattttca aattcaaaca aacgtaagac aagacatact 660  
ggagagaaac actttaagaa atgtggcaaa tcatttcaga agttttcaca cctaactcaa 720  
cataaggtaa ttcatgctgg agagaaaccc tacacttggtg aagaatgtgg caaagccttt 780

aaatggtcctt taatatttaa tgaacataag agaattcata ctggagagaa accttttact	840
tgtgaagaat gtggcagcat ctttaccaca tcctcacact ttgctaagca taaaataatt	900
catactggag aaaaacccta taaatgtgaa gaatgtggca aagcctttaa taggttcaca	960
acccttacta aacataagag aattcatgct ggagagaaac ccatcacatg tgaagaatgt	1020
aggaaaatct ttacctcatc ctcaaacttt gccaaacata agcgaattca tactggagag	1080
aaaccctaca aatgtgaaga atgtggcaaa gcctttaata ggtccacaac ccttactaaa	1140
cataagagaa ttcatactgg agagaaacc tacacatgtg aagaatgtgg caaagctttt	1200
agacagtcct caaaactgaa tgaacataag aaagttcata ctggagagcg gccctacaaa	1260
tgtgatgaat gtggcaaagc ctttggacgg tccagggtcc tgaatgaaca taaaaaatt	1320
catactggag agaaacccta caaatgtgaa gaatgtggca aagcctttag acggtccaca	1380
gatcggagtc aacataagaa aattcatagt gcagataaac cctacaaatg taaagaatgt	1440
gacaaagcct ttaaacaatt ttcgtcctcg agtcaacata agaaaattca tactgtagat	1500
aaaccctaca aatgtaaaga ttgtgacaaa gcctttaaac ggttctcaca cctgaataaa	1560
cataagaaaa ttcatacttg agagaaatcc tacaaatgta aagaatgtgg caaacctttg	1620
gatgatccac aaaccttaat gaacatgaga aaattttatac tgtagagaaa ccctggaaat	1680
gtgaagaacg tggcaaagtt ctttacctca ttctcaaacc ttgataaaca taagagaatt	1740
cataccggag agaaactgta caaatgtgaa gaatatgcaa agcctgtgaa tggtcacaa	1800
acctgaatga gcagaagaaa attattactg gagataaacc ctgcaaagt aaagagtgt	1860
acaaaacctt taaacagccc tcaccgtgta ataaacataa gaaaaatcat gctggaggga	1920
agccctacac atgtggcaga atgtggcaaa gcatttaatt ggtcctcaat gcttaataaa	1980
tataattcat gctggagaga aacttcacat gtgaaccgtg tgcaaagcct ttaaattggtc	2040
ctcaacctt aatgaacgta agtgaattca tgctggagca aaaatgcttc acatgcgaag	2100
aatgtggcac agtctttacc acatcctcaa actttgttaa acataagaga atttatacca	2160
gagagaaacc ctacacatgt aaagaagtgt gcaaagcctt caataggttc tcaaccctta	2220
ctgtgcacaa gataattcat tctggggaaa aaaatgctac aaatgtgaaa aacgtggcag	2280
agccttcaga ccatccacaa acccttatga aaattcataat ttgagagtag aagaatcatt	2340
ccacaaactt acattgagaa gatatgaaag atgaatataa gaattcatcc tagatataaa	2400
accatagaaa tgtaaaagat gtgacaaaac ctttaagcca tactccaggc ttcttaaaca	2460

```

taatgagaac tcatactgga ggaaagtctt acaaatgtga agaatgtggc agtcttttaa 2520
tcttcctcag tcttttctaa atcatgaaga taattcacac tgaagagaaa ctgcaaacgt 2580
ggagaagtgt gacaaagctt gcaaccacac tcaatctatt ctaaataata gagaaagtat 2640
attggtgaga agccaccaaa aatattgaaa aatgtgcaaa gccttcaaat gcttgtcaca 2700
tcttactgta tatatataat tcctactgaa gaaatcccct ggaaatgcaa aaaatgtggc 2760
aggattttta ccaatgctca tctttttgca catgatatcc tttatatctg agaaaagtta 2820
tagaaatata aaaaatatag aaaagtcata tctcctcaca ttttactaac tagcaatgtt 2880
catacttaat aaaaacatta taaatgtaat ttctgttgaa agacttcaga aaatataggc 2940
ctttaaagtg aagaagagta ttcttaagac aacaatacac tttag 2985

```

```

<210> 311
<211> 474
<212> PRT
<213> Homo sapiens

```

```

<400> 311

```

```

Met Glu Leu Leu Thr Phe Arg Asp Val Ala Ile Glu Phe Ser Pro Glu
1           5           10           15

```

```

Glu Trp Lys Cys Leu Asp Pro Asp Gln Gln Asn Leu Tyr Arg Asp Val
20           25           30

```

```

Met Leu Glu Asn Tyr Arg Asn Leu Val Ser Leu Gly Val Ala Ile Ser
35           40           45

```

```

Asn Pro Asp Leu Val Thr Cys Leu Glu Gln Arg Lys Glu Pro Tyr Asn
50           55           60

```

```

Val Lys Ile His Lys Ile Val Ala Arg Pro Pro Ala Met Cys Ser His
65           70           75           80

```

```

Phe Thr Gln Asp His Trp Pro Val Gln Gly Ile Glu Asp Ser Phe His
85           90           95

```

```

Lys Leu Ile Leu Arg Arg Tyr Glu Lys Cys Gly His Asp Asn Leu Gln
100          105          110

```

```

Leu Arg Lys Gly Cys Lys Ser Leu Asn Glu Cys Lys Leu Gln Lys Gly
115          120          125

```

Gly Tyr Asn Glu Phe Asn Glu Cys Leu Ser Thr Thr Gln Ser Lys Ile  
 130 135 140

Leu Gln Cys Lys Ala Ser Val Lys Val Val Ser Lys Phe Ser Asn Ser  
 145 150 155 160

Asn Lys Arg Lys Thr Arg His Thr Gly Glu Lys His Phe Lys Glu Cys  
 165 170 175

Gly Lys Ser Phe Gln Lys Phe Ser His Leu Thr Gln His Lys Val Ile  
 180 185 190

His Ala Gly Glu Lys Pro Tyr Thr Cys Glu Glu Cys Gly Lys Ala Phe  
 195 200 205

Lys Trp Ser Leu Ile Phe Asn Glu His Lys Arg Ile His Thr Gly Glu  
 210 215 220

Lys Pro Phe Thr Cys Glu Glu Cys Gly Ser Ile Phe Thr Thr Ser Ser  
 225 230 235 240

His Phe Ala Lys His Lys Ile Ile His Thr Gly Glu Lys Pro Tyr Lys  
 245 250 255

Cys Glu Glu Cys Gly Lys Ala Phe Asn Arg Phe Thr Thr Leu Thr Lys  
 260 265 270

His Lys Arg Ile His Ala Gly Glu Lys Pro Ile Thr Cys Glu Glu Cys  
 275 280 285

Arg Lys Ile Phe Thr Ser Ser Ser Asn Phe Ala Lys His Lys Arg Ile  
 290 295 300

His Thr Gly Glu Lys Pro Tyr Lys Cys Glu Glu Cys Gly Lys Ala Phe  
 305 310 315 320

Asn Arg Ser Thr Thr Leu Thr Lys His Lys Arg Ile His Thr Gly Glu  
 325 330 335

Lys Pro Tyr Thr Cys Glu Glu Cys Gly Lys Ala Phe Arg Gln Ser Ser  
 340 345 350

Lys Leu Asn Glu His Lys Lys Val His Thr Gly Glu Arg Pro Tyr Lys  
 355 360 365

Cys Asp Glu Cys Gly Lys Ala Phe Gly Arg Ser Arg Val Leu Asn Glu  
 370 375 380

His Lys Lys Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Glu Glu Cys  
 385 390 395 400

Gly Lys Ala Phe Arg Arg Ser Thr Asp Arg Ser Gln His Lys Lys Ile  
 405 410 415

His Ser Ala Asp Lys Pro Tyr Lys Cys Lys Glu Cys Asp Lys Ala Phe  
 420 425 430

Lys Gln Phe Ser Leu Leu Ser Gln His Lys Lys Ile His Thr Val Asp  
 435 440 445

Lys Pro Tyr Lys Cys Lys Asp Cys Asp Lys Ala Phe Lys Arg Phe Ser  
 450 455 460

His Leu Asn Lys His Lys Lys Ile His Thr  
 465 470

<210> 312

<211> 540

<212> DNA

<213> Homo sapiens

<400> 312

attgcatatt gttttaatga taaatataaa cacagtaaaa ctattaagag atacatagga	60
attataatct cacattcaga ataggttact gctaattgtg tggaagggtg agaaaagaaa	120
ggagaaacag ttatctatac tctcttcac gggtacctag cttcaacaac aactttcaaa	180
attctgttgt atacacttca gtgtttcttc tgtgtgtgaa tacatgcaat atatacacia	240
acatacggct tcctttttca cccaggatga aatctgagag ccctggaaga gttgacgcca	300
ggccctctga cctcctttcc aactacttct tcccaccac accctcctgg atgacctcct	360
cccacctgg agcatgctaa aacagtccaa gaccttctgc aattactcct ctgcctgcaa	420
cactcttccc tgtttcatat ctgactgttt taccagtaag atgtcattcc aatgtcacct	480
cacaggagag gccttccttg accatcccat atagaataac cttttcatcc tctactcatt	540



<210> 313  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 313

Met Leu Lys Gln Ser Lys Thr Phe Cys Asn Tyr Ser Ser Ala Cys Asn  
 1 5 10 15

Thr Leu Pro Cys Phe Ile Ser Asp Cys Phe Thr Ser Lys Met Ser Phe  
 20 25 30

Gln Cys His Leu Thr Gly Glu Ala Phe Leu Asp His Pro Ile  
 35 40 45

<210> 314  
 <211> 500  
 <212> DNA  
 <213> Homo sapiens

<400> 314  
 cctgcgaaaa gattggaggc ctctcattcc cagccagttt aatactccga ccctcctttt 60  
 ccagagtctg tcatgccctc ctgggcagcc ccttctccaa gtgtcagctg tcctgacctg 120  
 gccagtcttc atctatcagt gaccagacat atggtgcaag caggtctcca gcaaaacttt 180  
 cctcaactcc agcacagcca gtgtcttgca ctcgattttc aatttcacct tgtggagctt 240  
 ggccatggaa caaaagacag gaacaagtga tgctattact aaatggaagg agtgttgga 300  
 gagttaattg atgaaattaa ctctcttcc tcctccaaca gtgcaggagc aagtatctgc 360  
 ttagtgtgat catacatata cgcttctctt cacaagctta tacctctggg actcagagag 420  
 tgaaactcag aaagcaaggt ccacacgtgc caccgccacc cttaaggca ggtctcacia 480  
 caacctctct catgcatcct 500

<210> 315  
 <211> 65  
 <212> PRT  
 <213> Homo sapiens

<400> 315

Met Pro Ser Trp Ala Ala Pro Ser Pro Ser Val Ser Cys Pro Asp Leu  
 1 5 10 15

Ala Ser Pro His Leu Ser Val Thr Arg His Met Val Gln Ala Gly Leu

	20		25		30	
Gln Gln Asn Phe Pro Gln Leu Gln His Ser Gln Cys Leu Ala Leu Asp	35		40		45	
Phe Gln Phe His Leu Val Glu Leu Gly His Gly Thr Lys Asp Arg Asn	50		55		60	
Lys	65					

<210> 316  
 <211> 468  
 <212> DNA  
 <213> Homo sapiens

<400> 316  
 agagacgggg ctttgccatg ttgaccaggc tggactcaaa ctctgacct caggatgatcc 60  
 gccacctcg gcctcccaaa gcactgggat tacaggaatg agccactgca ctcggcctac 120  
 ttctgcattc cttagagtac atcctagcta ggatatattc acttgtcttt agagctaaca 180  
 gcagaagaaa ggtacctaga tgcttatcta gctctttatc tttctagaaa ttctagaaga 240  
 tgagaggggc agtgggtggct ccaagggagt gatttttagga tggactggga cagagagggg 300  
 ctgcttacac atactcacac agaggccatt aatttaggga gttcaaggtc caggaggttg 360  
 acggcatcta ggctgtggc agagtgcact cctgctttgg ggaatgtatg ggcagcttct 420  
 tgctgtagt tggaggggta gagagaggga tcaataattt catgggtg 468

<210> 317  
 <211> 49  
 <212> PRT  
 <213> Homo sapiens

<400> 317  
 Met Asp Trp Asp Arg Glu Gly Leu Leu Thr His Thr His Thr Glu Ala  
 1 5 10 15  
 Ile Asn Leu Gly Ser Ser Arg Ser Arg Arg Leu Thr Ala Ser Arg Pro  
 20 25 30  
 Val Ala Glu Cys Thr Pro Ala Leu Gly Asn Val Trp Ala Ala Ser Cys  
 35 40 45

Leu

<210> 318  
 <211> 490  
 <212> DNA  
 <213> Homo sapiens

<400> 318  
 tttttttttt tttttttaat atacaaaagt caactgtgtt tcaatttaataa 60  
 aataaaaaatt taaaacagct ctcatattat tgagtgaag acacaaatac atactaatga 120  
 gtccatatat ataaagctca aaagcagggg aaacaatacc gccgtgttaa cactaccgta 180  
 cttaagtttg aggaggaggg aatgatagag gtttagcagg gacatgaggt ggacttttga 240  
 cttgggtagc tgttcaatgt tatatatatg ggaaaacatg tgttgtgcac ttttctacat 300  
 gtgtatattc ttcaaatat tttaaaataa taaagcaagc aactatgtat tagcagatag 360  
 aaaaatgata aagtgataga tctaataoct ggttatttaa aataaataaa tagataaact 420  
 tctggctgat ttaaagcaga ataaaaagtg aaaaagtcaa ttacataaaa taggaaaata 480  
 taatttacgg 490

<210> 319  
 <211> 33  
 <212> PRT  
 <213> Homo sapiens

<400> 319

Met Arg Trp Thr Phe Asp Leu Gly Ser Cys Ser Met Leu Tyr Ile Trp  
 1 5 10 15

Glu Asn Met Cys Cys Ala Leu Phe Tyr Met Cys Ile Phe Phe Thr Ile  
 20 25 30

Phe

<210> 320  
 <211> 449  
 <212> DNA  
 <213> Homo sapiens

<400> 320  
 ttcattaaaa aaatgggggt gggggcaagg gtctgagaa ctcagagatg agcctgttta 60

```

cacaccagtc ccagaaaagc ctacagaaaa cctggggaac accacactga ccaactgagac      120
cataaaagcc ccagtaaagt ccacagaaaaa cccagaaaaa acagcagcag tcacaaagac      180
tataaaacct tcagtcaagg tcacaggaga caaatctctc actactacct cttctcatct      240
aaataaaact gaagttactc atcaggtgcc cactggttct ttcaccctca ttacatctag      300
aacgaagctg agttctatca catcagaagc cacaggaaac gagagccatc catacctcaa      360
taaagatggc tcacagaaag gtatccacgc tggacagatg ggagagaatg attcattccc      420
tgcattggcc atagttattg tggtcctgg                                     449

```

```

<210> 321
<211> 235
<212> PRT
<213> Homo sapiens

```

```

<400> 321

```

```

Met Thr Gln Val Thr Glu Lys Ser Thr Glu His Pro Glu Lys Thr Thr
1          5          10          15

```

```

Ser Thr Thr Glu Lys Thr Thr Arg Thr Pro Glu Lys Pro Thr Leu Tyr
          20          25          30

```

```

Ser Glu Lys Thr Ile Cys Thr Lys Gly Lys Asn Thr Pro Val Pro Glu
          35          40          45

```

```

Lys Pro Thr Glu Asn Leu Gly Asn Thr Thr Leu Thr Thr Glu Thr Ile
          50          55          60

```

```

Lys Ala Pro Val Lys Ser Thr Glu Asn Pro Glu Lys Thr Ala Ala Val
65          70          75          80

```

```

Thr Lys Thr Ile Lys Pro Ser Val Lys Val Thr Gly Asp Lys Ser Leu
          85          90          95

```

```

Thr Thr Thr Ser Ser His Leu Asn Lys Thr Glu Val Thr His Gln Val
          100          105          110

```

```

Pro Thr Gly Ser Phe Thr Leu Ile Thr Ser Arg Thr Lys Leu Ser Ser
          115          120          125

```

```

Ile Thr Ser Glu Ala Thr Gly Asn Glu Ser His Pro Tyr Leu Asn Lys
          130          135          140

```

Asp Gly Ser Gln Lys Gly Ile His Ala Gly Gln Met Gly Glu Asn Asp  
145 150 155 160

Ser Phe Pro Ala Trp Ala Ile Val Ile Val Val Leu Val Ala Val Ile  
165 170 175

Leu Leu Leu Val Phe Leu Gly Leu Ile Phe Leu Val Ser Tyr Met Met  
180 185 190

Arg Thr Arg Arg Thr Leu Thr Gln Asn Thr Gln Tyr Asn Asp Ala Glu  
195 200 205

Asp Glu Gly Gly Pro Asn Ser Tyr Pro Val Tyr Leu Met Glu Gln Gln  
210 215 220

Asn Leu Gly Met Gly Gln Ile Pro Ser Pro Arg  
225 230 235

<210> 322  
<211> 419  
<212> DNA  
<213> Homo sapiens

<400> 322  
ttccctcaca ctccctctcc tcaaacaac atttcgggat tcaactggcac ttgcaggttg 60  
ttaggaaccg gtcttgattt tataagacac ctttcaaac ataatcccgg tgcggcgtgt 120  
aagggtgtggg aaccgttttag tcacagacac cgtcccgtct acctccccg agtccagcct 180  
tgggtgggtg ctgcacagcg acttgcggcc ttaggtcttc tcgctgtgcc ttcctttcct 240  
cctgagagat gctctccgcc taagaccgct aacagctcaa ttgggtctca ttgatccac 300  
tcaccatcta gagccctgtt gcctcattaa tccgttgtgc caccagctca cgggctgcaa 360  
ctgggaagag acgagacctg tttatccatc gccgacactg ggatacgag caatctgca 419

<210> 323  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 323

Phe Pro His Thr Pro Ser Pro Gln Thr Asn Ile Ser Gly Phe Thr Gly  
1 5 10 15

Thr Cys Arg Leu Leu Gly Thr Gly Leu Asp Phe Ile Arg His Leu Ser  
20 25 30

Lys His Asn Pro Gly Ala Ala Cys Lys Val Trp Glu Pro Phe Ser His  
35 40 45

Arg His Arg Pro Val Tyr Leu Pro Arg Val Gln Pro Trp Val Gly Ala  
50 55 60

Ala Gln Arg Leu Ala Ala Leu Gly Leu Leu Ala Val Pro Ser Phe Pro  
65 70 75 80

Pro Glu Arg Cys Ser Pro Pro Lys Thr Ala Asn Ser Ser Ile Gly Ser  
85 90 95

His

<210> 324  
<211> 573  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (475)..(475)  
<223> n = unknown

<400> 324  
tttgtttttg ttgcctaccc ccaatcccca acccctgcag tgctttgatt atgagaaagt 60  
tctgcatgac ttagcataac tgctcttttc taaaagcctc tgcaattaga tccaaagggg 120  
tgggggttgg accatgccag gttttgctga ggaattgggg gatcggttac agaattatgg 180  
gaaggttggt tgactttcaa atcttcactt atcccctgcg atacatttgg cttcatgact 240  
gtttactgtg tggcttggtt gctagcgcac tctatctagg ttaagatatt gcttcctttc 300  
ttcaaattct tgccatgtgc tgattaattc ttctgttttt aatttttctt ttccctggat 360  
taattgccat ttcagagttt gcatgaaacc atataaact attgagaagt ttttggggaa 420  
ggctatcggg catttgagga ttttgcttac cataagcatg catcttttct accgngaac 480  
acgaggactc tactggactg agttcagtgg ctgagacaaa attacaatag ccaataacag 540  
taacagcagc agcagccaca ggttatcaag ctg 573

<210> 325  
 <211> 43  
 <212> PRT  
 <213> Homo sapiens

<400> 325

Met Lys Pro Tyr Asn Thr Ile Glu Lys Phe Leu Gly Lys Ala Ile Gly  
 1 5 10 15

His Leu Arg Ile Leu Pro Thr Ile Ser Met His Leu Phe Tyr Arg Glu  
 20 25 30

Ser Arg Gly Leu Tyr Trp Thr Glu Phe Ser Gly  
 35 40

<210> 326  
 <211> 2351  
 <212> DNA  
 <213> Homo sapiens

<400> 326

gatgccaaaa ttactttttt ctttccaaat atcaccttct gactgtttcc accatgggta 60  
 agaggggctga ataagatgat cattcttttag atgacgaatt aacccttgct tcttcgaaag 120  
 gtttttaggga aattaacaaa aaaattccca gatgccaaaca gccaccattc aaaagaccac 180  
 caatctattg catcatacca gatgccactc tctcttccta gtagggattt ctctcctcgg 240  
 tcttgatcaa ggtgttataa tagagacatt ttcattatag acagtgtcct gaagggattc 300  
 cagctcaaat ataggaattc ttaaacctag ctgaaactcc caaagtgatt tcatttgctgg 360  
 gcatattttta acatacttag gggaaagcaa atcttttaaac aaagcaaac accaaactac 420  
 agtttttaaaa agaagaaagg agagcgtatt ttagtttcaa aattacatta cattttaatt 480  
 taattttcct tctaattttc ctgtcagcat tttatttaca aaaactgtgc agcaaacgag 540  
 ggaaaatctt ccaacacaaa caactctgta atgactaaat tggttttatt catatatattt 600  
 agacatttgg ttaacttgga tctttttcat aagttctttg tgatgctttg taagggttagt 660  
 gtaactgaag tgtttgtag tttgatttgg tcccacagtg cttaattcag tggatatttt 720  
 gctagaagtt ttaatgtaaa cttgggtggt taactgacta ttaagtgtaa cctattgtga 780  
 tttctaagag gagtctgcc aagaactgta tgtccaaaac tgatctgttt taacagttag 840  
 tgaggaacag cttccgagat aaagtaagtt ctttttcta ttgctaattt tgctttttta 900  
 aatagcagtg ttgtaagact aatatttcca cttaccacca atagagggag cattaattaa 960

```

ctatgtcatg gaattgtttt gatatttttg aaaacaagtg attccacca taaaatgaaa 1020
agagaagatt gaccttaaga aaaaaactct taaagctagg agacaatgac atgaaatcac 1080
tcaatacatg ttacaaatga aagaaggcca aaagccactt taaaatattt taaactgttt 1140
cacagtagat ttgaaagtgt ctttggtcaa atttagcaaa gtaggaagaa ttttcactaa 1200
taccgcctga aaagttgatc ttaggtgcc ttagggcca cgtgtagctt tctgtttctc 1260
aaatctgaga gagaccatt tgccttaatg ctgatttggc atgtaaaatg ctaagcaatt 1320
gggttagaat ccaccttttc ttttggtaga acatgtagag aaaaagctgc aggtgacttg 1380
aaaccctgag gcgtctatca tcctttccct gttaaaggaag tgtctcttaa aaaaaggga 1440
gtgggggagg aggtggagga tccctaaaga attcttaatg aggtgatata atcattgtag 1500
tccatgacaa aatggaccag ccaggtttgc atagcagtag acatattcct actgtacatt 1560
tatccttccc aaatatgtca cattctaaaa tagttgacaa attattttgt ggaaagagga 1620
agaagctgga ttggagtggg agatctaatac tggaggagca aagaggtagt tgtttattgc 1680
tatgttcctg gcccatcaaa tggccacttt ccaaactgac ccacatttta ggaaataaac 1740
caatctggac ctgtttcaaa aggatagaga tgctttttaga ttgtcaattc tcacttttaa 1800
gttaacaat cacaatatc tttagaaata gggaaagaca ttgcttcaa aatcaaagaa 1860
tgagtgtgga tctttttaat ttttttttgt ttcaagtcct acagtcactc tacattttaga 1920
ccttcatggt agggtgatat gagtgctaaa aaaatttctt tctagtagcc aggaaacaga 1980
tagataagat aaaagcaaat gttccagatt taagacttct taggatgagt acaaggaaga 2040
gagaaatagt atggaaagga catttttttag caatttataa ttttaaaatg gaatttgcca 2100
aacaaggagg aggaaaaaaa gtcaaagggg aatttttatc tcaagatatt tagatatggt 2160
ttataaaaaa ataatatatt ctaccactaa aaacactggt attatctcag catcatgggc 2220
aatttttctt tattacatgc caatatgtgt acaaaaaggg ccccaaagt tgtgaaatat 2280
aatcctaaaa aagaaaataa ttggaacaca tggatctgtt acaattctac acagggggaa 2340
acaagctaag c 2351

```

```

<210> 327
<211> 97
<212> PRT
<213> Homo sapiens
<400> 327

```



Met Asp Gln Pro Gly Leu His Ser Ser Arg His Ile Pro Thr Val His  
1 5 10 15

Leu Ser Phe Pro Asn Met Ser His Ser Lys Ile Val Asp Lys Leu Phe  
20 25 30

Cys Gly Lys Arg Lys Lys Leu Asp Trp Ser Gly Arg Ser Asn Leu Glu  
35 40 45

Glu Gln Arg Gly Ser Cys Leu Leu Leu Cys Ser Trp Pro Ile Lys Trp  
50 55 60

Pro Leu Ser Lys Leu Thr His Ile Leu Gly Asn Lys Pro Ile Trp Thr  
65 70 75 80

Cys Phe Lys Arg Ile Glu Met Leu Leu Asp Cys Gln Phe Ser Leu Leu  
85 90 95

Ser

<210> 328  
<211> 400  
<212> DNA  
<213> Homo sapiens

<400> 328  
gcggccgcgc ctgcctgccc cacctcgtaa gggcctgtga cctcagagg ccagccgccg 60  
ggcgctgcat tcgagcgggtg gggctcctgt ccgtgcgctt tcttcccga gccccggccg 120  
ggattccgcc cttcgtcctt gccacccgct cgccactctt ccctaategc tgttcattct 180  
ccgggtgcgct gtcccgccat ggtctgaccc cacttcaatc ttaccttcgg tccgtccttt 240  
gaacaccccg acccccgacc cttttcttcc aaaacattcc atccttcttg gcttctgcta 300  
ctcaataatg gacagcagct cgaaggccat gtatcccacg gctttgctga aatttgcttc 360  
gggttgccctt taagagactg gtcgtttcct tttgaagaga 400

<210> 329  
<211> 79  
<212> PRT  
<213> Homo sapiens

<400> 329

Gly Arg Ala Cys Leu Pro His Leu Val Arg Ala Cys Asp Leu Thr Arg  
1 5 10 15

Pro Ala Ala Gly Arg Cys Ile Arg Ala Val Gly Leu Leu Ser Val Arg  
20 25 30

Phe Pro Pro Ala Ala Pro Ala Gly Ile Pro Pro Phe Val Leu Ala Thr  
35 40 45

Arg Ser Pro Leu Phe Pro Asn Arg Cys Ser Phe Ser Gly Ala Leu Ser  
50 55 60

Arg His Gly Leu Thr Pro Leu Gln Ser Tyr Leu Arg Ser Val Leu  
65 70 75

<210> 330  
<211> 1618  
<212> DNA  
<213> Homo sapiens

<400> 330  
gattgatttc caccatcaac acctttacct cttccgcct gaaaataaaa gatgaaatat 60  
aacaagtaaa tcgcaatcta ccttgacacag aatcttctgg agaggaaaga agaaaccatg 120  
tctagacaag atgctggaaa gaccacagga agacacagat atgtgtgcct ttattagcgg 180  
agccactact tgaggagat gaagcgggag gagtgggtgg acccaatgcc aggccggccg 240  
tgcttcacgg gcttgtaggt gatggagaac tcgccagggt cgtggccgat catctccagc 300  
ttgatctcca cctggttgaa ggtcttgccg ttgtagacgc ccacctgct gccaccatc 360  
ttgggagga tgatcatatc gcgcagggtgc gtcttcacca cttcctgctt ctctatggtc 420  
ggcgccctct tcttggccta gcataggcgc ctcagcagcg aatgcggctt ggcctcagc 480  
attccgccac aggccgtggt tcagccgccg cagctggcgc gcgccgtaca gctgcctcag 540  
ctgctcaaag gacatgtcca gcagctggcc caggccaca ccgcggtagg tgaacttgcg 600  
gaagatccgc tgcttcttct cctctacctc tgccatcttg ccggatcctc tgaaaatgat 660  
tccgtaagtg ccagagtcct tcacatatgg attttaacct aattctgtaa tgattttaat 720  
tagctgatat attaaaaaca acgtcagtaa gttttccct tcaaggaagc ctcaactttg 780  
agaaacggtg aattacgtga ggtgaacctc gtatttatgt gaggaaagct ctgcactggt 840  
tttgattctc acattttaat tagctgatac attaaaaaca atataagtaa tttttccctt 900

```

ccgggaaacc tcaacttgga gtaacgctgg attacgtgag ctaaacctcg taattatgtg      960
agaaaggcta agtattgggt ttgtttccca catttacgtg aggaaattga ggcacaatgt      1020
taagtgtcac aaggtcaagt aactagtaag gggcaggcca agatagaaat ctgtttgcag      1080
aactcttgtg cttaatgact aagaagcgtg cgcagatgca agggccagac agggaaacaa      1140
gagatccatt tgtaccaata gcatggaaga ttgactttgt ttcagggaat cgcggttttt      1200
cataaaaact tcgggattaa cccacctcac atattttctc caaagttata gttatgtatt      1260
ggatttaaga atagactgaa cctgggctcc ccactgcaca agataaaaaa ctgatagagg      1320
ctgggcacgg tggctcacgc ctgtattccc agcactttgg gagaccaagg taggcggatc      1380
acctgaggtc agaagtttga gactatcctg ggcaacatgg tgaaacccta actctactaa      1440
aaatacaaaa tcagctgggt gtggtggtgg gtacctgtaa tcccagctac tcgggaagtt      1500
gaggcaggaa aatcgcttga acctggaggc agaggttgcg gtgagccaag atggcgccac      1560
tgcactccag cctgggtgac agagcgagac cccgtcacca aaaaaaaaaa aaaaaaaa      1618

```

<210> 331  
 <211> 43  
 <212> PRT  
 <213> Homo sapiens

<400> 331

```

Met Arg Leu Glu Pro Gln His Ser Ala Thr Gly Arg Gly Ser Ala Ala
1           5           10           15

```

```

Ala Ala Gly Ala Arg Arg Thr Ala Ala Ser Ala Ala Gln Arg Thr Cys
20           25           30

```

```

Pro Ala Ala Gly Pro Gly Pro His Arg Gly Arg
35           40

```

<210> 332  
 <211> 3673  
 <212> DNA  
 <213> Homo sapiens

```

<400> 332
gacgggctgg ggaggtggtg ccaggctggt tgctagctgc cgccgctgct caccgggcc      60
gtccggccgc ttcatgtgca ccgggcctcg gggcagtgtt gggggtggcg gggcgccagg      120
tcgccgaccc gaggtttcgg cgcgactggt tccgcatccc ctccccgccg gccgaatctg      180

```

caggccccgc	gcgccaggca	ggcttcgcgg	ctgcgcccc	ggcccgcgca	ggacctgcct	240
tgtccaccat	gaaaggcacc	cgggccatcg	gcagcgtccc	ggagcgcagc	ccagcagggtg	300
tggacctgag	tctgacaggt	ctccctccgc	ctgtgtcccc	gcgtcctggc	agtgcgcgca	360
ccaccaagcc	catcgtccgc	tctgtctccg	tggtcacagg	cagcgagcag	aagaggaagg	420
tgctggaggc	cacagggcct	gggggctccc	aggccatcaa	caaccttaga	agatccaaca	480
gcaccacgca	ggtcagccag	cctcggagcg	gctccccag	gccaacggag	cccacagact	540
tcctgatgct	cttcgagggc	agccccagt	ggaaaaagag	gcctgccagc	ctgagcacag	600
cccccagcga	gaagggagcc	acctggaacg	tcctggatga	ccagccccgg	ggcttcacct	660
tgccatccaa	tgcccgaggt	tccagtgcc	ttgactcacc	agcggggccg	cggaggaaag	720
aatgcaccgt	ggccctggcc	cccaacttca	ctgctaacaa	caggagcaac	aagggagcag	780
tgggcaactg	cgtcaccacc	atggtgcaca	accgctacac	cccctcggag	agggcgcctc	840
cgtcaagag	ctccaaccag	actgccccct	cctcaacaa	catcatcaag	gcagccacct	900
gtgagggcag	tgagagcagc	ggctttggga	agtgccgaa	gaatgtctcc	agtgccaccc	960
actcagcccg	gaacaatact	gggggcagca	cgggcttgcc	caggcggaag	gaggtgacgg	1020
aggaggaggc	tgagaggttt	atccaccagg	tgaaccaggc	cgtgtgcacc	atccagcgct	1080
ggtaccggca	ccagggtgcag	cggcgcggag	caggagctgc	ccgcctggag	cacttgcttc	1140
aggccaagcg	ggaggagcag	cggcagcggt	caggcgaggg	gacctctttg	gacctgcacc	1200
agcagaaaga	ggcagccagg	aggaaggccc	gggaggagaa	ggcacgccaa	gccaggcgag	1260
cagccattca	ggagctgcaa	cagaaacgag	ccctgagagc	ccagaaggcg	agcactgccg	1320
agcgtggggc	acctgagaat	cccagggaga	ccagagtgcc	aggaatgcgg	cagcctgctc	1380
aggagctgtc	ccccacgcca	ggcggcactg	cccaccaggc	cctcaaggcc	aacaatgctg	1440
gtggtggcct	ccctgctgca	ggccccggag	accgctgcct	gccacctcc	gactcatccc	1500
cagaaccaca	gcagcctcca	gaggacagga	cgcaggacgt	tcttgcccag	gatgcagctg	1560
gggacaacct	ggagatgatg	gccccgagca	gggggagcgc	caagtccagg	gggccactgg	1620
aggagctgct	gcacacactg	cagctgctgg	agaaggagcc	ggacgcgctg	ccccgcccc	1680
ggacccatca	caggggcaga	tacgcctggg	ccagcgaggt	gaccacggag	gatgacgcca	1740
gctctctgac	agctgacaac	ttggagaaat	ttggaaaact	cagtgcgttc	cccgaacctc	1800
ctgaggatgg	gacgctgcta	tcggaggcca	agctacaaag	catcatgagc	ttcttgagcg	1860

agatggagaa	gtctgggcag	gaccagctgg	actcccagca	ggaggggtgg	gtgccggagg	1920
cggggccggg	gcccctggag	ctgggggtccg	aggtgagcac	gtctgtgatg	cggtgaagc	1980
tggaggtgga	ggagaagaag	caggccatgc	tgctgctgca	gagagcgctg	gcgcagcagc	2040
gagacctcac	ggcccggcgg	gtcaaggaga	cagagaaggc	actgagccgg	cagctgcagc	2100
ggcagaggga	gcactacgag	gccaccatcc	agcggcactt	ggccttcatt	gaccagctga	2160
ttgaggacaa	gaaggtcctg	agtgaaaagt	gcgaggctgt	ggtggccgag	ctgaagcagg	2220
aggaccagag	atgcaccgag	cgtgtggccc	aggcacaggc	gcagcacgag	ctggagatta	2280
aaaaactcaa	agaattaatg	agcgccaccg	agaaagcccg	ccgggagaag	tggatcagtg	2340
agaaaaccaa	gaagatcaag	gaggtcactg	tccgaggtct	ggagcccag	atccagaagc	2400
tgattgcaag	gcacaagcag	gaagtgcgga	ggctcaagag	cctgcacgag	gcggagctgc	2460
tgagtcgga	tgagcgggcc	tcgcagcgct	gcctgcgcca	ggccgaggag	ctgcgggagc	2520
agctggagcg	ggagaaggag	gcgctgggcc	agcaggagcg	cgaacgtgct	cggcagcggg	2580
tccagcagca	cctggagcag	gagcagtggg	cgctgcagca	gcaacggcag	cggctgtaca	2640
gtgaggtggc	tgaggagagg	gagcggctgg	gccagcaggc	agccaggcag	cgggcggagc	2700
tggaagagct	gaggcagcag	ctggaggaga	gcagctctgc	actgaccga	gccctgaggg	2760
ctgagtttga	gaagggcagg	gaggagcagg	agcgccggca	ccagatggag	ctgaataccc	2820
tgaagcagca	gctggagctg	gagaggcagg	cgtgggaggc	cggccgcacc	aggaaggagg	2880
aggcgtggct	gctgaaccgg	gaacaggagc	tgagggaaga	aatccgaaa	ggccgggaca	2940
aggagattga	gctggtcatt	caccggctgg	aggccgacat	ggcgctggcc	aaggaggaga	3000
gtgagaaggc	tgccgagagc	cgcatcaagc	gcttacggga	caagtacgag	gccgagctct	3060
ccgagctgga	gcagtcggag	cggaagcttc	aggagcggtg	ctcggagctg	aagggccagc	3120
ttggggaggc	cgagggcgag	aatctgcgtc	tgagggcct	tgtgcggcag	aaggagcggg	3180
cgctggagga	tgcgaggcg	gtgaacgagc	agctttctag	cgagcgagc	aacctggccc	3240
aggtgatccg	ccaggagttc	gaggaccggc	tggcagcctc	tgaggaggag	acgcggcagg	3300
ccaaggccga	gctggccacg	ctgcaggccc	gccagcagct	ggagctggag	gaggtgcacc	3360
ggagggtgaa	gacagccctc	gcgaggaagg	aggaggccgt	gagcagcctc	cggacacaac	3420
atgaggctgc	ggtgaagcgg	gccgaccacc	tggaggagct	gctggagcag	cacaggaggc	3480
ccacgccaag	taccaagtga	ccagggatgc	cggaacact	gtcgaagaac	ggaaggcaga	3540

ggacagagggc tggacgtggg ccagagggcc cacaggggacg cccacctgcc cccacagag 3600  
 gctggtggtt gagatgccca cggctaagca cctgtggctg cattttaaca gtaaaggagg 3660  
 ccgttgtttt cag 3673

<210> 333  
 <211> 1165  
 <212> PRT  
 <213> Homo sapiens

<400> 333

Arg Ala Gly Glu Val Val Pro Gly Trp Leu Leu Ala Ala Ala Ala Ala  
 1 5 10 15

His Pro Gly Arg Pro Ala Ala Ser Leu Ser Pro Gly Leu Gly Ala Val  
 20 25 30

Leu Gly Val Ala Gly Arg Gln Val Ala Asp Pro Arg Phe Arg Arg Asp  
 35 40 45

Trp Phe Arg Ile Pro Ser Pro Pro Ala Glu Ser Ala Gly Pro Ala Arg  
 50 55 60

Gln Ala Gly Phe Ala Ala Ala Pro Pro Ala Arg Ala Gly Pro Ala Leu  
 65 70 75 80

Ser Thr Met Lys Gly Thr Arg Ala Ile Gly Ser Val Pro Glu Arg Ser  
 85 90 95

Pro Ala Gly Val Asp Leu Ser Leu Thr Gly Leu Pro Pro Pro Val Ser  
 100 105 110

Arg Arg Pro Gly Ser Ala Ala Thr Thr Lys Pro Ile Val Arg Ser Val  
 115 120 125

Ser Val Val Thr Gly Ser Glu Gln Lys Arg Lys Val Leu Glu Ala Thr  
 130 135 140

Gly Pro Gly Gly Ser Gln Ala Ile Asn Asn Leu Arg Arg Ser Asn Ser  
 145 150 155 160

Thr Thr Gln Val Ser Gln Pro Arg Ser Gly Ser Pro Arg Pro Thr Glu  
 165 170 175

Pro Thr Asp Phe Leu Met Leu Phe Glu Gly Ser Pro Ser Gly Lys Lys  
 180 185 190  
 Arg Pro Ala Ser Leu Ser Thr Ala Pro Ser Glu Lys Gly Ala Thr Trp  
 195 200 205  
 Asn Val Leu Asp Asp Gln Pro Arg Gly Phe Thr Leu Pro Ser Asn Ala  
 210 215 220  
 Arg Ser Ser Ser Ala Leu Asp Ser Pro Ala Gly Pro Arg Arg Lys Glu  
 225 230 235 240  
 Cys Thr Val Ala Leu Ala Pro Asn Phe Thr Ala Asn Asn Arg Ser Asn  
 245 250 255  
 Lys Gly Ala Val Gly Asn Cys Val Thr Thr Met Val His Asn Arg Tyr  
 260 265 270  
 Thr Pro Ser Glu Arg Ala Pro Pro Leu Lys Ser Ser Asn Gln Thr Ala  
 275 280 285  
 Pro Ser Leu Asn Asn Ile Ile Lys Ala Ala Thr Cys Glu Gly Ser Glu  
 290 295 300  
 Ser Ser Gly Phe Gly Lys Leu Pro Lys Asn Val Ser Ser Ala Thr His  
 305 310 315 320  
 Ser Ala Arg Asn Asn Thr Gly Gly Ser Thr Gly Leu Pro Arg Arg Lys  
 325 330 335  
 Glu Val Thr Glu Glu Glu Ala Glu Arg Phe Ile His Gln Val Asn Gln  
 340 345 350  
 Ala Ala Val Thr Ile Gln Arg Trp Tyr Arg His Gln Val Gln Arg Arg  
 355 360 365  
 Gly Ala Gly Ala Ala Arg Leu Glu His Leu Leu Gln Ala Lys Arg Glu  
 370 375 380  
 Glu Gln Arg Gln Arg Ser Gly Glu Gly Thr Leu Leu Asp Leu His Gln  
 385 390 395 400

Gln Lys Glu Ala Ala Arg Arg Lys Ala Arg Glu Glu Lys Ala Arg Gln  
 405 410 415  
 Ala Arg Arg Ala Ala Ile Gln Glu Leu Gln Gln Lys Arg Ala Leu Arg  
 420 425 430  
 Ala Gln Lys Ala Ser Thr Ala Glu Arg Gly Pro Pro Glu Asn Pro Arg  
 435 440 445  
 Glu Thr Arg Val Pro Gly Met Arg Gln Pro Ala Gln Glu Leu Ser Pro  
 450 455 460  
 Thr Pro Gly Gly Thr Ala His Gln Ala Leu Lys Ala Asn Asn Ala Gly  
 465 470 475 480  
 Gly Gly Leu Pro Ala Ala Gly Pro Gly Asp Arg Cys Leu Pro Thr Ser  
 485 490 495  
 Asp Ser Ser Pro Glu Pro Gln Gln Pro Pro Glu Asp Arg Thr Gln Asp  
 500 505 510  
 Val Leu Ala Gln Asp Ala Ala Gly Asp Asn Leu Glu Met Met Ala Pro  
 515 520 525  
 Ser Arg Gly Ser Ala Lys Ser Arg Gly Pro Leu Glu Glu Leu Leu His  
 530 535 540  
 Thr Leu Gln Leu Leu Glu Lys Glu Pro Asp Ala Leu Pro Arg Pro Arg  
 545 550 555 560  
 Thr His His Arg Gly Arg Tyr Ala Trp Ala Ser Glu Val Thr Thr Glu  
 565 570 575  
 Asp Asp Ala Ser Ser Leu Thr Ala Asp Asn Leu Glu Lys Phe Gly Lys  
 580 585 590  
 Leu Ser Ala Phe Pro Glu Pro Pro Glu Asp Gly Thr Leu Leu Ser Glu  
 595 600 605  
 Ala Lys Leu Gln Ser Ile Met Ser Phe Leu Asp Glu Met Glu Lys Ser  
 610 615 620



Gly Gln Asp Gln Leu Asp Ser Gln Gln Glu Gly Trp Val Pro Glu Ala  
 625 630 635 640

Gly Pro Gly Pro Leu Glu Leu Gly Ser Glu Val Ser Thr Ser Val Met  
 645 650 655

Arg Leu Lys Leu Glu Val Glu Glu Lys Lys Gln Ala Met Leu Leu Leu  
 660 665 670

Gln Arg Ala Leu Ala Gln Gln Arg Asp Leu Thr Ala Arg Arg Val Lys  
 675 680 685

Glu Thr Glu Lys Ala Leu Ser Arg Gln Leu Gln Arg Gln Arg Glu His  
 690 695 700

Tyr Glu Ala Thr Ile Gln Arg His Leu Ala Phe Ile Asp Gln Leu Ile  
 705 710 715 720

Glu Asp Lys Lys Val Leu Ser Glu Lys Cys Glu Ala Val Val Ala Glu  
 725 730 735

Leu Lys Gln Glu Asp Gln Arg Cys Thr Glu Arg Val Ala Gln Ala Gln  
 740 745 750

Ala Gln His Glu Leu Glu Ile Lys Lys Leu Lys Glu Leu Met Ser Ala  
 755 760 765

Thr Glu Lys Ala Arg Arg Glu Lys Trp Ile Ser Glu Lys Thr Lys Lys  
 770 775 780

Ile Lys Glu Val Thr Val Arg Gly Leu Glu Pro Glu Ile Gln Lys Leu  
 785 790 795 800

Ile Ala Arg His Lys Gln Glu Val Arg Arg Leu Lys Ser Leu His Glu  
 805 810 815

Ala Glu Leu Leu Gln Ser Asp Glu Arg Ala Ser Gln Arg Cys Leu Arg  
 820 825 830

Gln Ala Glu Glu Leu Arg Glu Gln Leu Glu Arg Glu Lys Glu Ala Leu  
 835 840 845

Gly Gln Gln Glu Arg Glu Arg Ala Arg Gln Arg Phe Gln Gln His Leu  
 850 855 860

Glu Gln Glu Gln Trp Ala Leu Gln Gln Gln Arg Gln Arg Leu Tyr Ser  
 865 870 875 880

Glu Val Ala Glu Glu Arg Glu Arg Leu Gly Gln Gln Ala Ala Arg Gln  
 885 890 895

Arg Ala Glu Leu Glu Glu Leu Arg Gln Gln Leu Glu Glu Ser Ser Ser  
 900 905 910

Ala Leu Thr Arg Ala Leu Arg Ala Glu Phe Glu Lys Gly Arg Glu Glu  
 915 920 925

Gln Glu Arg Arg His Gln Met Glu Leu Asn Thr Leu Lys Gln Gln Leu  
 930 935 940

Glu Leu Glu Arg Gln Ala Trp Glu Ala Gly Arg Thr Arg Lys Glu Glu  
 945 950 955 960

Ala Trp Leu Leu Asn Arg Glu Gln Glu Leu Arg Glu Glu Ile Arg Lys  
 965 970 975

Gly Arg Asp Lys Glu Ile Glu Leu Val Ile His Arg Leu Glu Ala Asp  
 980 985 990

Met Ala Leu Ala Lys Glu Glu Ser Glu Lys Ala Ala Glu Ser Arg Ile  
 995 1000 1005

Lys Arg Leu Arg Asp Lys Tyr Glu Ala Glu Leu Ser Glu Leu Glu  
 1010 1015 1020

Gln Ser Glu Arg Lys Leu Gln Glu Arg Cys Ser Glu Leu Lys Gly  
 1025 1030 1035

Gln Leu Gly Glu Ala Glu Gly Glu Asn Leu Arg Leu Gln Gly Leu  
 1040 1045 1050

Val Arg Gln Lys Glu Arg Ala Leu Glu Asp Ala Gln Ala Val Asn  
 1055 1060 1065

Glu Gln Leu Ser Ser Glu Arg Ser Asn Leu Ala Gln Val Ile Arg  
1070 1075 1080

Gln Glu Phe Glu Asp Arg Leu Ala Ala Ser Glu Glu Glu Thr Arg  
1085 1090 1095

Gln Ala Lys Ala Glu Leu Ala Thr Leu Gln Ala Arg Gln Gln Leu  
1100 1105 1110

Glu Leu Glu Glu Val His Arg Arg Val Lys Thr Ala Leu Ala Arg  
1115 1120 1125

Lys Glu Glu Ala Val Ser Ser Leu Arg Thr Gln His Glu Ala Ala  
1130 1135 1140

Val Lys Arg Ala Asp His Leu Glu Glu Leu Leu Glu Gln His Arg  
1145 1150 1155

Arg Pro Thr Pro Ser Thr Lys  
1160 1165

<210> 334  
<211> 1183  
<212> DNA  
<213> Homo sapiens

<400> 334  
ggcacgagcc acgattcagt cccctggact gtagataaag acccttttctt gccaggtgct 60  
gagacaacca cactatgaga ggcaactccag gagacgctga tgggtggagga agggccgtct 120  
atcaatcaat gtgtaaacct attactggga ctattaatga tttgaatcag caagtgtgga 180  
cccttcaggg tcagaacctt gtggcagttc cacgaagtga cagtgtgacc ccagtcactg 240  
ttgctgttat cacatgcaag tatccagagg ctcttgagca aggcagaggg gatcccattt 300  
atttggaat ccagaatcca gaaatgtgtt tgtattgtga gaagggttga gaacagccca 360  
cattgcagct aaaagagcag aagatcatgg atctgtatgg ccaacccgag cccgtgaaac 420  
ccttcctttt ctaccgtgcc aagactggta ggacctccac ccttgagtct gtggccttcc 480  
cggactgggt cattgcctcc tccaagagag accagcccat cattctgact tcagaacttg 540  
ggaagtata caaactgcc tttgaattaa atataaatga ctgaactcag cctagagggtg 600  
gcagcttggt ctttgtctta aagtttctgg ttcccaatgt gttttcgtct acattttctt 660

```

agtggtcattt tcacgctggt gctgagacag gggcaaggct gctggtatca tctcatttta 720
taatgaagaa gaagcaatta cttcatagca actgaagaac aggatgtggc ctcagaagca 780
ggagagctgg gtggtataag gctgtcctct caagctggtg ctgtgtaggc cacaaggcat 840
ctgcatgagt gactttaaga ctcaaagacc aaacactgag ctttcttcta ggggtgggta 900
tgaagatgct tcagagctca tgcgcgttac ccacgatggc atgactagca cagagctgat 960
ctctgtttct gttttgcttt attccctctt gggatgatat catccagtct ttatatgttg 1020
ccaatatacc tcattgtgtg taatagaacc ttcttagcat taagaccttg taaacaaaaa 1080
taattcttgt gttaagttaa atcatttttg tcctaattgt aatgtgtaat cttaaagtta 1140
aataaacttt gtgtatttat ataataaaaa aaaaaaaaaa aaa 1183

```

<210> 335  
 <211> 169  
 <212> PRT  
 <213> Homo sapiens

<400> 335

Met Arg Gly Thr Pro Gly Asp Ala Asp Gly Gly Gly Arg Ala Val Tyr  
 1 5 10 15

Gln Ser Met Cys Lys Pro Ile Thr Gly Thr Ile Asn Asp Leu Asn Gln  
 20 25 30

Gln Val Trp Thr Leu Gln Gly Gln Asn Leu Val Ala Val Pro Arg Ser  
 35 40 45

Asp Ser Val Thr Pro Val Thr Val Ala Val Ile Thr Cys Lys Tyr Pro  
 50 55 60

Glu Ala Leu Glu Gln Gly Arg Gly Asp Pro Ile Tyr Leu Gly Ile Gln  
 65 70 75 80

Asn Pro Glu Met Cys Leu Tyr Cys Glu Lys Val Gly Glu Gln Pro Thr  
 85 90 95

Leu Gln Leu Lys Glu Gln Lys Ile Met Asp Leu Tyr Gly Gln Pro Glu  
 100 105 110

Pro Val Lys Pro Phe Leu Phe Tyr Arg Ala Lys Thr Gly Arg Thr Ser  
 115 120 125

Thr Leu Glu Ser Val Ala Phe Pro Asp Trp Phe Ile Ala Ser Ser Lys  
 130 135 140

Arg Asp Gln Pro Ile Ile Leu Thr Ser Glu Leu Gly Lys Ser Tyr Asn  
 145 150 155 160

Thr Ala Phe Glu Leu Asn Ile Asn Asp  
 165

<210> 336  
 <211> 129  
 <212> DNA  
 <213> Homo sapiens

<400> 336  
 tatacggtcg cgagaagacg acagaaggga tacacaacca gatatttcca ggaaggaaag 60  
 tggaaagccc tgctaacagg tatagtctta agggagacaa aaaaaaaaaa aaaaaaaaaa 120  
 aagtcgtat 129

<210> 337  
 <211> 42  
 <212> PRT  
 <213> Homo sapiens

<400> 337

Tyr Gly Cys Glu Lys Thr Thr Glu Gly Ile His Asn Gln Ile Phe Pro  
 1 5 10 15

Gly Arg Lys Val Glu Ser Pro Ala Asn Arg Tyr Ser Leu Lys Gly Asp  
 20 25 30

Lys Lys Lys Lys Lys Lys Lys Lys Val Val  
 35 40

<210> 338  
 <211> 694  
 <212> DNA  
 <213> Homo sapiens

<400> 338  
 ggagaggccg ggctggccag agtcttcggc ctccggcgtc gggaaatggc ggcggggggg 60  
 gggatggagt gacggttcct tggatatcac ccagagtatt gaagacgacc cacttctgga 120  
 tgcccagctt ctccacacc actcattaca agctcacttt agaccccgat tccatcctct 180

```

tcctacagtc atcatagtga atctgctgtg gtttattcat ctctgtgtgag ttgttttagca      240
tttttaacag gtgtgctttg ttcttatcct aatccaaatg aggacaagtg cccaggaaat      300
tacacaaacc cattgaaagt tcagacggtt ataatccttg ggaaagttat tttgtggatt      360
ctccattttac tccttgaatg ctacatccag tatcaccaca gcaaaatcag aaaccgaggc      420
tataacttga tctaccgatc aacaaggcat ctcaagagac ttgcgttgat gatacagtcc      480
tctggcaaca cagtgttct cctcatactg tgcatgcagc actccttccc agagcctggc      540
agattgtatc ttgacctcat tctggccatc ttggcactgg aactcatctg ttccctgata      600
tgtctcctca ttacacagt gaaaatccgg agatttaata aagctaaacc agagcctgat      660
atacttgacg aagacaacat ctatgcttac ccca                                     694

```

<210> 339  
 <211> 127  
 <212> PRT  
 <213> Homo sapiens

<400> 339

Leu Lys Val Gln Thr Val Ile Ile Leu Gly Lys Val Ile Leu Trp Ile  
 1 5 10 15

Leu His Leu Leu Leu Glu Cys Tyr Ile Gln Tyr His His Ser Lys Ile  
 20 25 30

Arg Asn Arg Gly Tyr Asn Leu Ile Tyr Arg Ser Thr Arg His Leu Lys  
 35 40 45

Arg Leu Ala Leu Met Ile Gln Ser Ser Gly Asn Thr Val Leu Leu Leu  
 50 55 60

Ile Leu Cys Met Gln His Ser Phe Pro Glu Pro Gly Arg Leu Tyr Leu  
 65 70 75 80

Asp Leu Ile Leu Ala Ile Leu Ala Leu Glu Leu Ile Cys Ser Leu Ile  
 85 90 95

Cys Leu Leu Ile Tyr Thr Val Lys Ile Arg Arg Phe Asn Lys Ala Lys  
 100 105 110

Pro Glu Pro Asp Ile Leu Asp Glu Asp Asn Ile Tyr Ala Tyr Pro  
 115 120 125

<210> 340  
 <211> 2974  
 <212> DNA  
 <213> Homo sapiens

<400> 340  
 ctcagggcag agggaggaag gacagcagac cagacagtca cagcagcctt gacaaaacgt 60  
 tcctggaact caagctcttc tccacagagg aggacagagc agacagcaga gaccatggag 120  
 tctccctcgg ccctcccca cagatgggtgc atcccctggc agaggctcct gctcacagcc 180  
 tcacttctaa ctttctggaa cccgcccacc actgccaagc tcactattga atccacgccg 240  
 ttcaatgtcg cagaggggaa ggaggtgctt ctacttgtcc acaatctgcc ccagcatctt 300  
 ttgggtaca gctgtgtaaa aggtgaaaga gtggatggca accgtcaaata tataggatat 360  
 gtaataggaa ctcaacaagc taccacaggg cccgcataca gtggtcgaga gataatatac 420  
 cccaatgcat ccctgctgat ccagaacatc atccagaatg acacaggatt ctacacccta 480  
 cacgtcataa agtcagatct tgtgaatgaa gaagcaactg gccagttccg ggtataaccg 540  
 gagctgcca agccctccat ctccagcaac aactccaaac ccgtggagga caaggatgct 600  
 gtggccttca cctgtgaacc tgagactcag gacgcaacct acctgtggtg ggtaaacaat 660  
 cagagcctcc cggtcagtcc caggctgcag ctgtccaatg gcaacaggac cctcactcta 720  
 ttcaatgtca caagaaatga cacagcaagc tacaatgtg aaaccagaa cccagtgagt 780  
 gccaggcgca gtgattcagt catcctgaat gtcctctatg gcccgatgc cccaccatt 840  
 tcccctctaa acacatctta cagatcaggg gaaaatctga acctctcctg ccacgcagcc 900  
 tctaaccac ctgcacagta ctcttggtt gtcaatggga ctttccagca atccaccaa 960  
 gagctcttta tcccacacat cactgtgaat aatagtggat cctatacgtg ccaagcccat 1020  
 aactcagaca ctggcctcaa taggaccaca gtcacgacga tcacagtcta tgcagagcca 1080  
 cccaaacct tcataccag caacaactcc aaccccggtg aggatgagga tgctgtagcc 1140  
 ttaacctgtg aacctgagat tcagaacaca acctacctgt ggtgggtaaa taatcagagc 1200  
 ctcccggta gtcccaggct gcagctgtcc aatgacaaca ggaccctcac tctactcagt 1260  
 gtcacaagga atgatgtagg accctatgag tgtggaatcc agaacgaatt aagtgttgac 1320  
 cacagcgacc cagtcacct gaatgtctc tatggcccag acgacccac catttcccc 1380  
 tcatacacct attacgtcc aggggtgaac ctacgcctc cctgccatgc agcctctaac 1440  
 ccacctgcac agtattcttg gctgattgat gggaacatcc agcaacacac acaagagctc 1500

```

tttatctcca acatcactga gaagaacagc ggactctata cctgccaggc caataactca 1560
gccagtggcc acagcaggac tacagtcaag acaatcacag tctctgcgga gctgcccaag 1620
ccctccatct ccagcaacaa ctccaaaccc gtggaggaca aggatgctgt ggccttcacc 1680
tgtgaacctg aggctcagaa cacaacctac ctgtggtggg taaatggtca gagcctccca 1740
gtcagtccca ggctgcagct gtccaatggc aacaggaccc tactctatt caatgtcaca 1800
agaaatgacg caagagccta tgtatgtgga atccagaact cagtgagtgc aaaccgcagt 1860
gaccagtcga ccctggatgt cctctatggg ccggacaccc ccatcatttc cccccagac 1920
tcgtcttacc tttcgggagc gaacctcaac ctctcctgcc actcggcctc taaccatcc 1980
ccgcagtatt cttggcgtat caatgggata ccgcagcaac acacacaagt tctctttatc 2040
gccaaaatca cgccaaataa taacgggacc tatgcctgtt ttgtctctaa cttggctact 2100
ggccgcaata attccatagt caagagcatc acagtctctg catctggaac ttctcctggt 2160
ctctcagctg gggccactgt cggcatcatg attggagtgc tggttggggg tgctctgata 2220
tagcagccct ggtgtagttt cttcatttca ggaagactga cagttgtttt gcttcttcct 2280
taaagcattt gcaacagcta cagtctaaaa ttgcttcttt accaaggata ttacagaaa 2340
agactctgac cagagatcga gaccatccta gccaacatcg tgaaaccca tctctactaa 2400
aaatacaaaa atgagctggg cttggtggcg cgcacctgta gtcccagtta ctcgggaggc 2460
tgaggcagga gaatcgcttg aaccggggag gtggagattg cagtgagccc agatcgcacc 2520
actgcactcc agtctggcaa cagagcaaga ctccatctca aaaagaaaag aaaagaagac 2580
tctgacctgt actcttgaat acaagtttct gataccactg cactgtctga gaatttccaa 2640
aactttaatg aactaactga cagcttcatg aaactgtcca ccaagatcaa gcagagaaaa 2700
taattaattt catgggacta aatgaactaa tgaggattgc tgattcttta aatgtcttgt 2760
ttcccagatt tcaggaaact ttttttcttt taagctatcc actcttacag caatttgata 2820
aaatatactt ttgtgaacaa aaattgagac atttacattt tctccctatg tggctgctcc 2880
agacttggga aactattcat gaatatttat attgtatggt aatatagtta ttgcacaagt 2940
tcaataaaaa tctgctcttt gtataacaga aaaa 2974

```

```

<210> 341
<211> 702
<212> PRT
<213> Homo sapiens

```



&lt;400&gt; 341

Met Glu Ser Pro Ser Ala Pro Pro His Arg Trp Cys Ile Pro Trp Gln  
 1 5 10 15  
 Arg Leu Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Pro Pro Thr  
 20 25 30  
 Thr Ala Lys Leu Thr Ile Glu Ser Thr Pro Phe Asn Val Ala Glu Gly  
 35 40 45  
 Lys Glu Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly  
 50 55 60  
 Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Ile  
 65 70 75 80  
 Gly Tyr Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser  
 85 90 95  
 Gly Arg Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile  
 100 105 110  
 Ile Gln Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp  
 115 120 125  
 Leu Val Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu  
 130 135 140  
 Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys  
 145 150 155 160  
 Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr  
 165 170 175  
 Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln  
 180 185 190  
 Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn  
 195 200 205  
 Asp Thr Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg  
 210 215 220

Arg Ser Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro  
 225 230 235 240  
 Thr Ile Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn  
 245 250 255  
 Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe  
 260 265 270  
 Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn  
 275 280 285  
 Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser  
 290 295 300  
 Asp Thr Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala  
 305 310 315 320  
 Glu Pro Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu  
 325 330 335  
 Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr  
 340 345 350  
 Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg  
 355 360 365  
 Leu Gln Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr  
 370 375 380  
 Arg Asn Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn Glu Leu Ser  
 385 390 395 400  
 Val Asp His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp  
 405 410 415  
 Asp Pro Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro Gly Val Asn  
 420 425 430  
 Leu Ser Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser  
 435 440 445

Trp Leu Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu Leu Phe Ile  
 450 455 460

Ser Asn Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys Gln Ala Asn  
 465 470 475 480

Asn Ser Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr Ile Thr Val  
 485 490 495

Ser Ala Glu Leu Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro  
 500 505 510

Val Glu Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Ala Gln  
 515 520 525

Asn Thr Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser  
 530 535 540

Pro Arg Leu Gln Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn  
 545 550 555 560

Val Thr Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile Gln Asn Ser  
 565 570 575

Val Ser Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly  
 580 585 590

Pro Asp Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr Leu Ser Gly  
 595 600 605

Ala Asn Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro Ser Pro Gln  
 610 615 620

Tyr Ser Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu  
 625 630 635 640

Phe Ile Ala Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe  
 645 650 655

Val Ser Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Ser Ile  
 660 665 670

Thr Val Ser Ala Ser Gly Thr Ser Pro Gly Leu Ser Ala Gly Ala Thr  
 675 680 685

Val Gly Ile Met Ile Gly Val Leu Val Gly Val Ala Leu Ile  
 690 695 700

<210> 342  
 <211> 832  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)..(832)  
 <223> n = unknown

<400> 342  
 agttaaaca atttttaag agaaaggaga taaccagagc atagccagca gaaggactcg 60  
 catgaggttt ggtgggactg cctagggaga aggaggcagc tggctgcgtg acagagccca 120  
 gtgatagggg agggcctgtg accccttaag gagctgagac gctgtcacag agcaatggga 180  
 gcgctgagtg atggagctgg atttgtgctt ttagaaaagc tttgttggtg gctgttggga 240  
 gaatggattg gaaggggggtg agactgcagt cagagactcc cataaggaag ctgttactgt 300  
 aatcacaaca acagatgcct acactccttc ccaagacttc cctctctgat cttagaagca 360  
 ttgtcaaadc tgggttccca gcctgccatg gcaagctgct tgctacttgg gagtgaagag 420  
 cccttggtga gctttttctt attcggtgac tgctcataaa gtgccttcac ctgccttgcc 480  
 ttattagcca gtcctgcctc caaattacca cacttgctc ctttcaggag tctcttcccc 540  
 ctaaagtccc tattactcct tctctctgct ttcagatcag aaacagaaaa agtcaccttc 600  
 cctaagagtc tgctccagtc cagtagaat gctttaaaat ttttctggcc tcanctgcc 660  
 ttcttgagca cagaaatttc tagaatattg aatgaatcac tggttcttta taatcatttt 720  
 gtccagtttc aatcactgca ttttaggaaa gatttgaaaa actgaaggac aaagtggggc 780  
 ctttaaagga cttangattc tttcaganga aagtatctaa ngaacaagtt aa 832

<210> 343  
 <211> 33  
 <212> PRT  
 <213> Homo sapiens

<400> 343

Met Pro Thr Leu Leu Pro Lys Thr Ser Leu Ser Asp Leu Arg Ser Ile  
 1 5 10 15

Val Lys Ser Gly Phe Pro Ala Cys His Gly Lys Leu Leu Ala Thr Trp  
 20 25 30

Glu

<210> 344  
 <211> 644  
 <212> DNA  
 <213> Homo sapiens

<400> 344  
 aacttaggct aggtacgagg ctgggtgtgc tcctactggc cgctcgaagc ttgaagctgc 60  
 agttcacttt cgogaatgta aggaaccag cttctgtgtg gtgggcactg agagcagaac 120  
 cgcattgagt cggagtggag cacagaagt taggtccttt tgcgctgttt caagctaaac 180  
 ccgtgtcact gatgccgtac agaagttaca gaatgggacg ccaccccaaa cattacgtca 240  
 tccgctgacc atttccttgc ggtcttccca cagtctaaat cgccatataa tctgatggat 300  
 ggggtcctcg cgcgggtcag ctctgggacg acagcgtaac cgtcgtctcc tccctctgcg 360  
 ggagggcgtg gacggggcac gggatttga gcggtgaagg aatcgggacc gaaaggagtc 420  
 ccaggacacc ggaaccagga ctccccggcg caccggaga gtttccgagc tcctttgaag 480  
 tatgaatcag aacttctgga tgggaatcct ggagccacca cttgcctat ggtcgcaatg 540  
 ggcaagtcgc tcaacctccc agatcctgtt ttctcatgag taaaacgggg attataatac 600  
 ccacctgaca atattatctt tgtgagaatt aaatgagtta gaat 644

<210> 345  
 <211> 59  
 <212> PRT  
 <213> Homo sapiens

<400> 345

Met Gly Ser Ser Arg Gly Ser Ala Pro Gly Arg Gln Arg Asn Pro Ser  
 1 5 10 15

Leu Leu Pro Leu Arg Glu Gly Val Asp Gly Ala Arg Asp Leu Glu Arg  
 20 25 30

Gly Arg Asn Arg Asp Arg Lys Glu Ser Gln Asp Thr Gly Thr Arg Thr  
 35 40 45

Pro Arg Arg Thr Arg Arg Val Ser Glu Leu Leu  
 50 55

<210> 346  
 <211> 2373  
 <212> DNA  
 <213> Homo sapiens

<400> 346  
 cacctggcgc acctgtcctt ttttcttcta tttttcagaa ccctgggcgg aaagcgcgag 60  
 cgagttgggc agatgccggc ggccgcggtg caggaagcgg tcggcgtgtg ctctacggg 120  
 atgcagctca gctgggacat caacgatccg cagatgcctc aggagctggc cctctttgac 180  
 caattccgag agtggcctga cggctatgtg cgcttcatct acagcagcga tgagaagaag 240  
 gcacagcgtc acctgagcgg ctgggccatg cgcaacacca acaaccacaa tggccacatc 300  
 ctcaagaagt cgtgcctggg tgtggtggtg tgtacacagg cctgcaccct gcccgacggt 360  
 tccgcctgc agctgaggcc ggccatctgc gacaaggcac ggctgaaaca gcagaagaag 420  
 gcatgcccta actgtcattc tgctttggag ttgattcctt gtcgagggca cagcggatac 480  
 cccgtaacca acttttggcg gcttgatggc aacgcgatct tttttcaggc caagggagtt 540  
 catgatcatc caagaccaga gagcaaatca gagacagaag ctagaagaag cgccatcaag 600  
 agacaaatgg cctctttcta ccaaccccag aaaaagagaa ttcgagaatc cgaggcagaa 660  
 gaaaatcaag acagcagtgg tcatttcagc aacatacctc ccttgaaaaa tccagaagac 720  
 tttgatatag ttactgaaac cagcttccct attccagggc agccttgccc ttccttccca 780  
 aagtctgatg tttacaaagc tacctgtgac ctagccacct ttcaaggaga caaaatgcc 840  
 cccttccaga aataactcaag cccaagaatc tatttgccta ggccaccttg cagctatgaa 900  
 ttggcaaacc ctggttatac aaattcaagc ccatatccca ccctttataa ggattccacc 960  
 agtatcccta atgacacaga ctgggttcat ctgaacacac tacaatgtaa tgtcaattca 1020  
 tacagcagct atgagagaag ctttgatttc accaacaaac agcatggctg gaaaccagct 1080  
 cttggaaaac ccagccttgt ggaaaggact aacctgggc agtttcaggc catggccact 1140  
 cgcccttatt ataaccaga gcttccctgc aggtacctca cgactccacc accaggtgcc 1200  
 cctgccctac aaaccgtgat caccaccacc actaaagtgt cctaccaggc ctaccagccc 1260

```

cctgctatga aatacagtga cagtgtgcga gaggtgaaga gcctttcgag ctgtaactat 1320
gctcctgaag atactgggat gtctgtctat ccagaaccct ggggtcctcc ggtgacagtc 1380
accagggcag cctctccttc agggccacct cctatgaaaa ttgcaggaga ttgccgggcc 1440
atcagaccca ctgtggctat tccccacgag ccagtttcct ctaggacaga tgaagcagag 1500
acttgggatg tgtgtctgtc tgggctgggc tccgcagtca gttactcaga cagagtgggt 1560
cccttcttta cctacaacaa tgaggatttt tgaaagacaa tccaggggac ataatagcag 1620
tgtgcatgca ggcaggaggc agggaaatgt gaaatggcaa tgatctctta ttgagttggg 1680
agattcacct tgtgtgcaaa gaaacacaga tagtagtaaa aattctgagt aactgagaaa 1740
ataatcagtt ggaaatgatt agataatatg ggaaatttca cacagcattt tgaaactggc 1800
tacaatacat agaagtagtg aggaaagtgt gagtctctca aatgaacaaa taagcaaact 1860
gtaggagggt aaatactgac ctaagttcac ttagcttatt agcaggagta gaagtcaagg 1920
attctgggtc ttattctagg acttttccca ttagagcacc ttagggaatt tcacatccct 1980
agaggctgcc aaaatagctt caggaagaaa tttttacaat cttatcacct gagtcatttc 2040
atgaaatttt tgtttagcat ttagaacctg ttaaactagc ttcaggaagt aattttgatt 2100
gttttatctc caacgtgtgt atctacagct tttcaaaaaa tctctagcaa tggtaaagtt 2160
cagttgtttt taaaagattc aatattagct tttcataaca tgatagtttc ctaacctttt 2220
cataaccttt tcataacatg atagtttcca taacagagac agcctaacaa tgatgagttg 2280
tatttaatgg attaccattg tactaaatac attttttttc tgattaggtt tcagaattat 2340
aattaaaatg ttttgcttaa aaaaaaaaaa aaa 2373

```

```

<210> 347
<211> 506
<212> PRT
<213> Homo sapiens

```

```

<400> 347

```

```

Met Pro Ala Ala Ala Val Gln Glu Ala Val Gly Val Cys Ser Tyr Gly
1           5           10           15

```

```

Met Gln Leu Ser Trp Asp Ile Asn Asp Pro Gln Met Pro Gln Glu Leu
          20           25           30

```

```

Ala Leu Phe Asp Gln Phe Arg Glu Trp Pro Asp Gly Tyr Val Arg Phe
          35           40           45

```

Ile Tyr Ser Ser Asp Glu Lys Lys Ala Gln Arg His Leu Ser Gly Trp  
 50 55 60

Ala Met Arg Asn Thr Asn Asn His Asn Gly His Ile Leu Lys Lys Ser  
 65 70 75 80

Cys Leu Gly Val Val Val Cys Thr Gln Ala Cys Thr Leu Pro Asp Gly  
 85 90 95

Ser Arg Leu Gln Leu Arg Pro Ala Ile Cys Asp Lys Ala Arg Leu Lys  
 100 105 110

Gln Gln Lys Lys Ala Cys Pro Asn Cys His Ser Ala Leu Glu Leu Ile  
 115 120 125

Pro Cys Arg Gly His Ser Gly Tyr Pro Val Thr Asn Phe Trp Arg Leu  
 130 135 140

Asp Gly Asn Ala Ile Phe Phe Gln Ala Lys Gly Val His Asp His Pro  
 145 150 155 160

Arg Pro Glu Ser Lys Ser Glu Thr Glu Ala Arg Arg Ser Ala Ile Lys  
 165 170 175

Arg Gln Met Ala Ser Phe Tyr Gln Pro Gln Lys Lys Arg Ile Arg Glu  
 180 185 190

Ser Glu Ala Glu Glu Asn Gln Asp Ser Ser Gly His Phe Ser Asn Ile  
 195 200 205

Pro Pro Leu Glu Asn Pro Glu Asp Phe Asp Ile Val Thr Glu Thr Ser  
 210 215 220

Phe Pro Ile Pro Gly Gln Pro Cys Pro Ser Phe Pro Lys Ser Asp Val  
 225 230 235 240

Tyr Lys Ala Thr Cys Asp Leu Ala Thr Phe Gln Gly Asp Lys Met Pro  
 245 250 255

Pro Phe Gln Lys Tyr Ser Ser Pro Arg Ile Tyr Leu Pro Arg Pro Pro  
 260 265 270



Cys Ser Tyr Glu Leu Ala Asn Pro Gly Tyr Thr Asn Ser Ser Pro Tyr  
 275 280 285

Pro Thr Leu Tyr Lys Asp Ser Thr Ser Ile Pro Asn Asp Thr Asp Trp  
 290 295 300

Val His Leu Asn Thr Leu Gln Cys Asn Val Asn Ser Tyr Ser Ser Tyr  
 305 310 315 320

Glu Arg Ser Phe Asp Phe Thr Asn Lys Gln His Gly Trp Lys Pro Ala  
 325 330 335

Leu Gly Lys Pro Ser Leu Val Glu Arg Thr Asn His Gly Gln Phe Gln  
 340 345 350

Ala Met Ala Thr Arg Pro Tyr Tyr Asn Pro Glu Leu Pro Cys Arg Tyr  
 355 360 365

Leu Thr Thr Pro Pro Pro Gly Ala Pro Ala Leu Gln Thr Val Ile Thr  
 370 375 380

Thr Thr Thr Lys Val Ser Tyr Gln Ala Tyr Gln Pro Pro Ala Met Lys  
 385 390 395 400

Tyr Ser Asp Ser Val Arg Glu Val Lys Ser Leu Ser Ser Cys Asn Tyr  
 405 410 415

Ala Pro Glu Asp Thr Gly Met Ser Val Tyr Pro Glu Pro Trp Gly Pro  
 420 425 430

Pro Val Thr Val Thr Arg Ala Ala Ser Pro Ser Gly Pro Pro Pro Met  
 435 440 445

Lys Ile Ala Gly Asp Cys Arg Ala Ile Arg Pro Thr Val Ala Ile Pro  
 450 455 460

His Glu Pro Val Ser Ser Arg Thr Asp Glu Ala Glu Thr Trp Asp Val  
 465 470 475 480

Cys Leu Ser Gly Leu Gly Ser Ala Val Ser Tyr Ser Asp Arg Val Gly  
 485 490 495

Pro Phe Phe Thr Tyr Asn Asn Glu Asp Phe  
500 505

<210> 348  
<211> 428  
<212> DNA  
<213> Homo sapiens

<400> 348  
ttttttgcat atgctttctc tattcacaac tagaaagaac ataaactcct taagggtagg 60  
ggccgtctta tccttctttg aatcatgtgc aggtgcttaa taaataagtg attgatcctg 120  
ctcctaccac tcctaccacc aagtccttta ttgggtctcc tggttaactg gggaaaggga 180  
ggatccttta actttttacc actgtcctta ctatttctga gttctcttat ctataatctg 240  
tcttatgtcc tatagcacia atcactttat atattgcttt cccctcagca aactcctact 300  
tttcattctg agtttcaact tcagtttatg ccataatcta agccacttcc ctgctcttct 360  
ctttaaccag actcatcttc ttataacctg ctagaacaca ggcttctgag aacaggaatc 420  
accatcag 428

<210> 349  
<211> 42  
<212> PRT  
<213> Homo sapiens

<400> 349

Met Ser Tyr Ser Thr Asn His Phe Ile Tyr Cys Phe Pro Leu Ser Lys  
1 5 10 15

Leu Leu Leu Phe Ile Leu Ser Phe Asn Phe Ser Leu Cys His Asn Leu  
20 25 30

Ser His Phe Pro Ala Leu Leu Phe Asn Gln  
35 40

<210> 350  
<211> 1875  
<212> DNA  
<213> Homo sapiens

<400> 350  
caggccagag tcccagctgt cctggactct gctgtgggga agggctgatg caggtgtgga 60  
gtcaaagtgt ggtgcctcct gcagccgggt gccaggagggt gtggaggggc caccctgggc 120

tttgtccggg agcctggtct tcccgtcctt gggctgacag gtgctgctgc ctctgagccc	180
tccctgctaa gagctgtgtg ctgggtaagg ctgggtggccc tttgggctcc ctgtccagga	240
tttgtgctct ggagggtagg gcttgctggg ctggggactg gaggggaacg tggagctcct	300
tctgcctcct ttcttgcccc atgacagcag gcagatccca ggagagaaga gctcaggaga	360
tgggaagagg atctgtccag gggttagacc tcaaggggtga cttggagttc tttacggcac	420
ccatgctttc tttgaggagt tttgtgtttg tgggtgtggg gtctggggctc acctcctccc	480
acatccctgc ccagagggtg gcagagtggg ggcagtgcct tgctccccct gctcgtcttc	540
tgctgacctc cggctccctg tgctgcccc aagaccatgaa tggcacctac aacacctgtg	600
gctccagcga cctcacctgg cccccagcga tcaagctggg cttctacgcc tacttgggcg	660
tcctgctggt gctaggcctg ctgctcaaca gcctggcgct ctgggtgttc tgctgccgca	720
tgcagcagtg gacggagacc cgcactaca tgaccaacct ggcggtggcc gacctctgcc	780
tgctgtgcac cttgcccttc gtgctgact ccctgcgaga cacctcagac acgccgtgt	840
gccagctctc ccagggcatc tacctgacca acaggtacat gagcatcagc ctggtcacgg	900
ccatgcgcgt ggaccgctat gtggccgtgc ggcacccgct gcgtgccgc gggctgcggt	960
ccccaggca ggctgcggcc gtgtgcgcgg tcctctgggt gctggtcatc ggctccctgg	1020
tggctcgtg gctcctgggg attcaggagg gcggcttctg cttcaggagc acccggcaca	1080
atttcaactc catggcgctc ccgctgctgg gattctacct gccctggcc gtgggtggtct	1140
tctgctcct gaaggtggtg actgccctgg ccagaggcc acccaccgac gtggggcagg	1200
cagaggccac ccgcaaggct gcccgcatgg tctgggccaa cctcctggtg ttcgtggtct	1260
gcttcctgcc cctgcacgtg gggctgacag tgcgctcgc agtgggctgg aacgcctgtg	1320
ccctcctgga gacgatccgt cgcgccctgt acataaccag caagctctca gatgccaaact	1380
gctgcctgga cgccatctgc tactactaca tggccaagga gttccaggag gcgtctgcac	1440
tggccgtggc tccagtgct aaggcccaca aaagccagga ctctctgtgc gtgacctcg	1500
cctaagaggc gtgctgtggg cgctgtgggc caggtctcgg gggctccggg aggtgctgcc	1560
tgccagggga agctggaacc agtagcaagg agcccgggat cagccctgaa ctactgtgt	1620
attctcttgg agccttgggt gggcaggac gggccaggta cctgctctct tgggaagaga	1680
gagggacagg gacaaggga agaggactga ggccagagca aggccaatgt cagagacccc	1740
cgggatggg cctcacactt gccaccccca gaaccagctc acctggccag agtgggttcc	1800

tgctggccag ggtgcagcct tgatgacacc tgccgctgcc cctcggggct ggaataaaac 1860  
 tccccaccca gagtc 1875

<210> 351  
 <211> 309  
 <212> PRT  
 <213> Homo sapiens

<400> 351

Met Asn Gly Thr Tyr Asn Thr Cys Gly Ser Ser Asp Leu Thr Trp Pro  
 1 5 10 15

Pro Ala Ile Lys Leu Gly Phe Tyr Ala Tyr Leu Gly Val Leu Leu Val  
 20 25 30

Leu Gly Leu Leu Leu Asn Ser Leu Ala Leu Trp Val Phe Cys Cys Arg  
 35 40 45

Met Gln Gln Trp Thr Glu Thr Arg Ile Tyr Met Thr Asn Leu Ala Val  
 50 55 60

Ala Asp Leu Cys Leu Leu Cys Thr Leu Pro Phe Val Leu His Ser Leu  
 65 70 75 80

Arg Asp Thr Ser Asp Thr Pro Leu Cys Gln Leu Ser Gln Gly Ile Tyr  
 85 90 95

Leu Thr Asn Arg Tyr Met Ser Ile Ser Leu Val Thr Ala Ile Ala Val  
 100 105 110

Asp Arg Tyr Val Ala Val Arg His Pro Leu Arg Ala Arg Gly Leu Arg  
 115 120 125

Ser Pro Arg Gln Ala Ala Ala Val Cys Ala Val Leu Trp Val Leu Val  
 130 135 140

Ile Gly Ser Leu Val Ala Arg Trp Leu Leu Gly Ile Gln Glu Gly Gly  
 145 150 155 160

Phe Cys Phe Arg Ser Thr Arg His Asn Phe Asn Ser Met Ala Phe Pro  
 165 170 175

Leu Leu Gly Phe Tyr Leu Pro Leu Ala Val Val Val Phe Cys Ser Leu  
 180 185 190

Lys Val Val Thr Ala Leu Ala Gln Arg Pro Pro Thr Asp Val Gly Gln  
 195 200 205

Ala Glu Ala Thr Arg Lys Ala Ala Arg Met Val Trp Ala Asn Leu Leu  
 210 215 220

Val Phe Val Val Cys Phe Leu Pro Leu His Val Gly Leu Thr Val Arg  
 225 230 235 240

Leu Ala Val Gly Trp Asn Ala Cys Ala Leu Leu Glu Thr Ile Arg Arg  
 245 250 255

Ala Leu Tyr Ile Thr Ser Lys Leu Ser Asp Ala Asn Cys Cys Leu Asp  
 260 265 270

Ala Ile Cys Tyr Tyr Tyr Met Ala Lys Glu Phe Gln Glu Ala Ser Ala  
 275 280 285

Leu Ala Val Ala Pro Ser Ala Lys Ala His Lys Ser Gln Asp Ser Leu  
 290 295 300

Cys Val Thr Leu Ala  
 305

<210> 352  
 <211> 1803  
 <212> DNA  
 <213> Homo sapiens

<400> 352  
 atgacagcgg ctccggcgctc tccgcagcag atcagggacc ggctgctgca ggccatcgac 60  
 cccagagca acatccggaa catggtggcg gtgctggaag tcatctccag cctggagaaa 120  
 taccctatta ccaaagaggc acttgaggaa acacgacttg ggaagctcat caacgacgctc 180  
 cgcaagaaaa ccaagaacga ggagctcgcc aagcgggccca agaagctgct gcgagctgg 240  
 cagaagctca tcgagccggc acaccagcat gaggcggcgc tgcgggggct ggcggggggc 300  
 accggctctg ccaacggggg cgcacacaac tgccggccgg aggtgggggc ggctggccca 360  
 cccaggagca tccatgacct gaagagccgc aatgacctcc agaggctgcc cgggcagcgg 420

```

ctggacaggc tgggcagccg caagcgccgg ggtgaccagc gtgacttcgg ccacccaggg 480
ccgccaccca aggtctccaa agctagccac gaccccctgg tccccaactc atccccctc 540
cccaccaacg ggatcagtgg gagtccagag agcttcgcca gtcctctgga tggcagtggg 600
catgcaggcc cagagggcag ccgcctggag cgtgacgaga atgacaagca cagtggcaag 660
atccccgtca acgccgtgcg accgcacacc agctccccgg gcctgggcaa gccccctgga 720
ccctgcttgc agccaaaggc ttcggtgctg cagcagctgg acaggggtgga cgagactccg 780
gggcctcccc atcccaaggg accccctcgc tgctctttca gtctctgga ctcacggcat 840
gagggctcct ttgcccgga gcagagcttg tatgcacca agggctccgt gccagcccc 900
tcaccgcggc ccaggcact cgatgccaca caggtgccgt caccgcttcc actggcacag 960
ccgtccacac cccccgtacg gcggtcagag ctgctgcca gtgcggaaag ccagtgctgc 1020
tggcttgagc agcctgagag ccaccagcgg ctggcggggc cgggctgcaa ggcagggctg 1080
tccccagccg agcccctcct gtcccgaggc ggcttttccc cagactcctc caaggcggac 1140
agtgatgctg cctcctcagg gggctcggac agtaaaaaga agaagaggta ccgacctcga 1200
gactatacgg ttaacttgga cgggcagggtg gctgaggcgg gcgtcaagcc tgtccggtta 1260
aaagagcgga agctcacctt tgaccccatg acgagacaga tcaaacctct gaccagaaa 1320
gagccagtgc gggcagacag ccctgtgcac atggagcagc agtccaggac agagctggac 1380
aagcaggagg ccaaggccag cctccagagc cccttcgaac agacgaactg gaaggagctg 1440
tcacgcaacg agatcatcca gtcctacctg agccggcaga gcagcctgct ctcacatcgc 1500
ggcgcgcaga cccaggggc tcaccacttc atgtctgagt acctgaagca ggaggagagc 1560
acccggcaag gggccaggca gctgcatgtg ctggtgcctc aaagcccgcc cacggacctc 1620
cctggtctga cccgggaggt cacacaggac gatctcgaca gaatccaggc cagccagtgg 1680
ccgggggtga acgggtgtca ggacacacag ggtaactggg atgactggac gcagtgcata 1740
tcgctcgatc cgcacggcga cgacgggcgc ttgaacattc tgccttatgt ctgcttgga 1800
tga 1803

```

```

<210> 353
<211> 600
<212> PRT
<213> Homo sapiens
<400> 353

```

Met Thr Ala Ala Pro Ala Ser Pro Gln Gln Ile Arg Asp Arg Leu Leu  
 1 5 10 15  
 Gln Ala Ile Asp Pro Gln Ser Asn Ile Arg Asn Met Val Ala Val Leu  
 20 25 30  
 Glu Val Ile Ser Ser Leu Glu Lys Tyr Pro Ile Thr Lys Glu Ala Leu  
 35 40 45  
 Glu Glu Thr Arg Leu Gly Lys Leu Ile Asn Asp Val Arg Lys Lys Thr  
 50 55 60  
 Lys Asn Glu Glu Leu Ala Lys Arg Ala Lys Lys Leu Leu Arg Ser Trp  
 65 70 75 80  
 Gln Lys Leu Ile Glu Pro Ala His Gln His Glu Ala Ala Leu Arg Gly  
 85 90 95  
 Leu Ala Gly Ala Thr Gly Ser Ala Asn Gly Gly Ala His Asn Cys Arg  
 100 105 110  
 Pro Glu Val Gly Ala Ala Gly Pro Pro Arg Ser Ile His Asp Leu Lys  
 115 120 125  
 Ser Arg Asn Asp Leu Gln Arg Leu Pro Gly Gln Arg Leu Asp Arg Leu  
 130 135 140  
 Gly Ser Arg Lys Arg Arg Gly Asp Gln Arg Asp Phe Gly His Pro Gly  
 145 150 155 160  
 Pro Pro Pro Lys Val Ser Lys Ala Ser His Asp Pro Leu Val Pro Asn  
 165 170 175  
 Ser Ser Pro Leu Pro Thr Asn Gly Ile Ser Gly Ser Pro Glu Ser Phe  
 180 185 190  
 Ala Ser Ser Leu Asp Gly Ser Gly His Ala Gly Pro Glu Gly Ser Arg  
 195 200 205  
 Leu Glu Arg Asp Glu Asn Asp Lys His Ser Gly Lys Ile Pro Val Asn  
 210 215 220

Ala Val Arg Pro His Thr Ser Ser Pro Gly Leu Gly Lys Pro Pro Gly  
 225 230 235 240  
 Pro Cys Leu Gln Pro Lys Ala Ser Val Leu Gln Gln Leu Asp Arg Val  
 245 250 255  
 Asp Glu Thr Pro Gly Pro Pro His Pro Lys Gly Pro Pro Arg Cys Ser  
 260 265 270  
 Phe Ser Pro Arg Asn Ser Arg His Glu Gly Ser Phe Ala Arg Gln Gln  
 275 280 285  
 Ser Leu Tyr Ala Pro Lys Gly Ser Val Pro Ser Pro Ser Pro Arg Pro  
 290 295 300  
 Gln Ala Leu Asp Ala Thr Gln Val Pro Ser Pro Leu Pro Leu Ala Gln  
 305 310 315 320  
 Pro Ser Thr Pro Pro Val Arg Arg Leu Glu Leu Leu Pro Ser Ala Glu  
 325 330 335  
 Ser Pro Val Cys Trp Leu Glu Gln Pro Glu Ser His Gln Arg Leu Ala  
 340 345 350  
 Gly Pro Gly Cys Lys Ala Gly Leu Ser Pro Ala Glu Pro Leu Leu Ser  
 355 360 365  
 Arg Ala Gly Phe Ser Pro Asp Ser Ser Lys Ala Asp Ser Asp Ala Ala  
 370 375 380  
 Ser Ser Gly Gly Ser Asp Ser Lys Lys Lys Lys Arg Tyr Arg Pro Arg  
 385 390 395 400  
 Asp Tyr Thr Val Asn Leu Asp Gly Gln Val Ala Glu Ala Gly Val Lys  
 405 410 415  
 Pro Val Arg Leu Lys Glu Arg Lys Leu Thr Phe Asp Pro Met Thr Arg  
 420 425 430  
 Gln Ile Lys Pro Leu Thr Gln Lys Glu Pro Val Arg Ala Asp Ser Pro  
 435 440 445



Val His Met Glu Gln Gln Ser Arg Thr Glu Leu Asp Lys Gln Glu Ala  
450 455 460

Lys Ala Ser Leu Gln Ser Pro Phe Glu Gln Thr Asn Trp Lys Glu Leu  
465 470 475 480

Ser Arg Asn Glu Ile Ile Gln Ser Tyr Leu Ser Arg Gln Ser Ser Leu  
485 490 495

Leu Ser Ser Ser Gly Ala Gln Thr Pro Gly Ala His His Phe Met Ser  
500 505 510

Glu Tyr Leu Lys Gln Glu Glu Ser Thr Arg Gln Gly Ala Arg Gln Leu  
515 520 525

His Val Leu Val Pro Gln Ser Pro Pro Thr Asp Leu Pro Gly Leu Thr  
530 535 540

Arg Glu Val Thr Gln Asp Asp Leu Asp Arg Ile Gln Ala Ser Gln Trp  
545 550 555 560

Pro Gly Val Asn Gly Cys Gln Asp Thr Gln Gly Asn Trp Tyr Asp Trp  
565 570 575

Thr Gln Cys Ile Ser Leu Asp Pro His Gly Asp Asp Gly Arg Leu Asn  
580 585 590

Ile Leu Pro Tyr Val Cys Leu Asp  
595 600

<210> 354  
<211> 1279  
<212> DNA  
<213> Homo sapiens

<400> 354  
tccaaaaccc gaggtctcgc taaaatcatc atggattcac ttggcgccgt cagcactcga 60  
cttgggtttg atcttttcaa agagctgaag aaaacaaatg atggcaacat cttcttttcc 120  
cctgtgggca tcttgactgc aattggcatg gtcctcctgg ggacccgagg agccaccgct 180  
tcccagttgg aggaggtggt tcaactctgaa aaagagacga agagctcaag aataaaggct 240  
gaagaaaaag aggtgattga gaacacagaa gcagtacatc aacaattcca aaagtttttg 300

actgaaataa gcaaactcac taatgattat gaactgaaca taaccaacag gctgtttgga 360  
 gaaaaaacat acctcttcct tcaaaaatac ttagattatg ttgaaaaata ttatcatgca 420  
 tctctggaac ctgttgatgt tgtaaagca gccgatgaaa gtcgaaagaa gattaattcc 480  
 tgggttgaaa gcaaaacaaa tgaaaaaatc aaggacttgt tcccagatgg ctctattagt 540  
 agctctacca agctggtgct ggtgaacatg gtttatttta aagggaatg ggacagggag 600  
 ttttaagaaag aaaatactaa ggaagagaaa ttttgatga ataagagcac aagtaaactt 660  
 gtacagatga tgacacagag ccattccttt agcttcactt tcctggagga cttgcaggcc 720  
 aaaattctag ggattccata taaaaacaac gacctaagca tgtttgatgct tctgccaac 780  
 gacatcgatg gcctggagaa gataatagat aaaataagtc ctgagaaatt ggtagagtgg 840  
 actagtccag ggcataatga agaaagaaag gtgaatctgc acttgccccg gtttgagggtg 900  
 gaggacagtt acgatctaga ggcggtcctg gctgccatgg ggatgggcca tgccttcagt 960  
 gagcaciaag ccgactactc gggaaatgtc tcaggctccg ggttgtagcg ccagaagttc 1020  
 ctgcacagtt cttttgtggc agtaactgag gaaggcaccg aggctgcagc tgccaccggc 1080  
 ataggcttta ctgtcacatc cgccccaggt catgaaaatg ttactgcaa tcatcccttc 1140  
 ctgtttctca tcaggcacia tgaatccaac agcatcctct tcttcggcag attttcttct 1200  
 ccttaagatg atcgttgcca tggcattgct gcttttagca aaaaacaact accagtggta 1260  
 ctcatatgaa tatgaaaat 1279

<210> 355  
 <211> 391  
 <212> PRT  
 <213> Homo sapiens

<400> 355

Met Asp Ser Leu Gly Ala Val Ser Thr Arg Leu Gly Phe Asp Leu Phe  
 1 5 10 15

Lys Glu Leu Lys Lys Thr Asn Asp Gly Asn Ile Phe Phe Ser Pro Val  
 20 25 30

Gly Ile Leu Thr Ala Ile Gly Met Val Leu Leu Gly Thr Arg Gly Ala  
 35 40 45

Thr Ala Ser Gln Leu Glu Glu Val Phe His Ser Glu Lys Glu Thr Lys  
 50 55 60

Ser Ser Arg Ile Lys Ala Glu Glu Lys Glu Val Ile Glu Asn Thr Glu  
 65 70 75 80  
 Ala Val His Gln Gln Phe Gln Lys Phe Leu Thr Glu Ile Ser Lys Leu  
 85 90 95  
 Thr Asn Asp Tyr Glu Leu Asn Ile Thr Asn Arg Leu Phe Gly Glu Lys  
 100 105 110  
 Thr Tyr Leu Phe Leu Gln Lys Tyr Leu Asp Tyr Val Glu Lys Tyr Tyr  
 115 120 125  
 His Ala Ser Leu Glu Pro Val Asp Phe Val Asn Ala Ala Asp Glu Ser  
 130 135 140  
 Arg Lys Lys Ile Asn Ser Trp Val Glu Ser Lys Thr Asn Glu Lys Ile  
 145 150 155 160  
 Lys Asp Leu Phe Pro Asp Gly Ser Ile Ser Ser Ser Thr Lys Leu Val  
 165 170 175  
 Leu Val Asn Met Val Tyr Phe Lys Gly Gln Trp Asp Arg Glu Phe Lys  
 180 185 190  
 Lys Glu Asn Thr Lys Glu Glu Lys Phe Trp Met Asn Lys Ser Thr Ser  
 195 200 205  
 Lys Ser Val Gln Met Met Thr Gln Ser His Ser Phe Ser Phe Thr Phe  
 210 215 220  
 Leu Glu Asp Leu Gln Ala Lys Ile Leu Gly Ile Pro Tyr Lys Asn Asn  
 225 230 235 240  
 Asp Leu Ser Met Phe Val Leu Leu Pro Asn Asp Ile Asp Gly Leu Glu  
 245 250 255  
 Lys Ile Ile Asp Lys Ile Ser Pro Glu Lys Leu Val Glu Trp Thr Ser  
 260 265 270  
 Pro Gly His Met Glu Glu Arg Lys Val Asn Leu His Leu Pro Arg Phe  
 275 280 285

Glu Val Glu Asp Ser Tyr Asp Leu Glu Ala Val Leu Ala Ala Met Gly  
 290 295 300

Met Gly Asp Ala Phe Ser Glu His Lys Ala Asp Tyr Ser Gly Met Ser  
 305 310 315 320

Ser Gly Ser Gly Leu Tyr Ala Gln Lys Phe Leu His Ser Ser Phe Val  
 325 330 335

Ala Val Thr Glu Glu Gly Thr Glu Ala Ala Ala Thr Gly Ile Gly  
 340 345 350

Phe Thr Val Thr Ser Ala Pro Gly His Glu Asn Val His Cys Asn His  
 355 360 365

Pro Phe Leu Phe Phe Ile Arg His Asn Glu Ser Asn Ser Ile Leu Phe  
 370 375 380

Phe Gly Arg Phe Ser Ser Pro  
 385 390

<210> 356  
 <211> 213  
 <212> DNA  
 <213> Homo sapiens

<400> 356  
 ttttatggtt aaaattcttt ggtgtttaat atagtaccaa ctcatctctga aaactggtaa 60  
 acaaaggaaa caaaacccca agtaattgtc ttctttcctg ggcaaatggt tgatgaggga 120  
 aagggttttat cttgttttat cttgttttca agacaaggtc ttgtctctatc acccagattg 180  
 gagtacagtg gcaaggatcat agatcactgc aac 213

<210> 357  
 <211> 36  
 <212> PRT  
 <213> Homo sapiens

<400> 357

Met Val Asp Glu Gly Lys Val Leu Ser Cys Phe Ile Leu Phe Ser Arg  
 1 5 10 15

Gln Gly Leu Ala Leu Ser Pro Arg Leu Glu Tyr Ser Gly Lys Val Ile  
 20 25 30

Asp His Cys Asn  
35

<210> 358  
<211> 2356  
<212> DNA  
<213> Homo sapiens

<400> 358  
cctccgctcg ccccgagaga gaccocggcca tgcaggagcc gctgctggga gccgagggcc 60  
cggactacga caccttcccc gagaagccgc ccccgctcgcc aggggacagg gcgcgggtcg 120  
ggaccctgca gaacaaaagg gtgttcctgg ccaccttcgc cgcagtgtc ggcaatttca 180  
gctttgggta tgccctggtc tacacatccc ctgtcatccc agccctggag cgctccttgg 240  
atcctgacct gcatctgacc aaatcccagg catcctggtt tgggtccgtg ttcaccctgg 300  
gagcagcggc cggaggcctg agtgccatga tcctcaacga cctcctgggc cggaagctga 360  
gcatcatgtt ctgagctgtg ccgtcggcgg ccggctatgc gctcatggcg ggtgcgcacg 420  
gcctctggat gctgctgctc ggaaggacgc tgacgggctt cgccgggggg ctcacagctg 480  
cctgcatccc ggtgtacgtg tctgagattg ctccccagg cgttcgtggg gctctggggg 540  
ccacacccca gctcatggca gtgttcggat ccctgtccct ctacgccctt ggccctctgc 600  
tgccgtggcg ctggctggct gtggccgggg aggcgcctgt gctcatcatg atcctgtctg 660  
tcagcttcat gcccaactcg ccgcgcttcc tgctctctcg gggcaggac gaagaggccc 720  
tgccggcgct ggccctggctg cgtgggacgg acgtcgatgt ccaactggag ttcgagcaga 780  
tccaggacaa cgtccggaga cagagcagcc gagtatcgtg ggctgaggca cgggcccccc 840  
acgtgtgccc gcccatcacc gtggccttgc tgatgcgcct cctgcagcag ctgacgggca 900  
tcacgcccat cctggtctac ctgcagtcca tcttcgacag caccgctgtc ctgctgcccc 960  
ccaaggacga cgcagccatc gttggggccg tgcggctcct gtccgtgctg atcgccgccc 1020  
tcaccatgga cctcgcaggc cgcaagggtc tgctcttcgt ctgacggcc atcatgtttg 1080  
ctgccaacct gactctgggg ctgtacatcc actttggccc caggcctctg agcccaaca 1140  
gcactgcggg cctggaaagc gagtcctggg gggacttggc gcagccctg gcagcaccgc 1200  
ctggctacct caccctggtg cccctgctgg ccacatgct cttcatcatg ggctacgccg 1260  
tgggctgggg tcccatcacc tggctgctca tgtctgaggt cctgcccctg cgtgcccgtg 1320  
gcgtggcctc agggctctgc gtgctggcca gctggctcac cgccttcgtc ctaccaagt 1380

```

ccttcctgcc agtggtgagc accttcggcc tccaggtgcc tttcttcttc ttgcgggcca 1440
tctgcttggt gaggctggtg ttcacaggct gctgtgtgcc cgagaccaag ggacgggtccc 1500
tggagcagat cgagtccttc ttccgcacgg ggagaaggtc cttcttgccg taggtcaagg 1560
tccccgcctg gagggggcca aacccccagt ggctgggcct ctgtgttggc tacaaacctg 1620
caccctggga ccaagaggca gcagtcatcc ctgccaccag ccagagcaca ggaagagcag 1680
tgtgatgggg cctcagcagc gggtgcccct ggctcgggac aggtagcact gctgtccagc 1740
cacagcccca gcccaggcag cccacagtgc tgcacgtagc catggggccg aggagtgcac 1800
acaaccctgc atccaggagc acggccctgc tgggtgacct caggcctagt ccctttccct 1860
tgcgtgaagg acacgcccca cagaaggcta cggggaggac tgagaggaca gggctggagg 1920
cagccaagta acgtagtcac atcatcgccg tctgatctgg tggcatctgg ctgtgcaagg 1980
aagaccgggc tttgccctca caagtcttat gggcaccaca gggaacatcc tggacttaaa 2040
aagccagggc aggcggggca cagtggctca cgctgtaat ccagcactt tgggaggcca 2100
aagcagggtg attacccaag gccaggagt caagaccagc ctggccaaca tggtgaaacc 2160
ccgtctctac taaaaaatac aaaaaagctg ggtgtggtgg cacacaccg tagttccagc 2220
tacttgggag gctgaggcag cattgcttga acccgggagg tggaggctgc aatgagctga 2280
gatcatgcca ttgcaactca gcctgggcaa cgagagtga actccgtccc caccctctgc 2340
caaaaaaaaa aaaaaa 2356

```

```

<210> 359
<211> 507
<212> PRT
<213> Homo sapiens

```

```

<400> 359

```

```

Met Gln Glu Pro Leu Leu Gly Ala Glu Gly Pro Asp Tyr Asp Thr Phe
1           5           10           15

```

```

Pro Glu Lys Pro Pro Pro Ser Pro Gly Asp Arg Ala Arg Val Gly Thr
20           25           30

```

```

Leu Gln Asn Lys Arg Val Phe Leu Ala Thr Phe Ala Ala Val Leu Gly
35           40           45

```

```

Asn Phe Ser Phe Gly Tyr Ala Leu Val Tyr Thr Ser Pro Val Ile Pro
50           55           60

```

Ala Leu Glu Arg Ser Leu Asp Pro Asp Leu His Leu Thr Lys Ser Gln  
65 70 75 80

Ala Ser Trp Phe Gly Ser Val Phe Thr Leu Gly Ala Ala Ala Gly Gly  
85 90 95

Leu Ser Ala Met Ile Leu Asn Asp Leu Leu Gly Arg Lys Leu Ser Ile  
100 105 110

Met Phe Ser Ala Val Pro Ser Ala Ala Gly Tyr Ala Leu Met Ala Gly  
115 120 125

Ala His Gly Leu Trp Met Leu Leu Leu Gly Arg Thr Leu Thr Gly Phe  
130 135 140

Ala Gly Gly Leu Thr Ala Ala Cys Ile Pro Val Tyr Val Ser Glu Ile  
145 150 155 160

Ala Pro Pro Gly Val Arg Gly Ala Leu Gly Ala Thr Pro Gln Leu Met  
165 170 175

Ala Val Phe Gly Ser Leu Ser Leu Tyr Ala Leu Gly Leu Leu Leu Pro  
180 185 190

Trp Arg Trp Leu Ala Val Ala Gly Glu Ala Pro Val Leu Ile Met Ile  
195 200 205

Leu Leu Leu Ser Phe Met Pro Asn Ser Pro Arg Phe Leu Leu Ser Arg  
210 215 220

Gly Arg Asp Glu Glu Ala Leu Arg Ala Leu Ala Trp Leu Arg Gly Thr  
225 230 235 240

Asp Val Asp Val His Trp Glu Phe Glu Gln Ile Gln Asp Asn Val Arg  
245 250 255

Arg Gln Ser Ser Arg Val Ser Trp Ala Glu Ala Arg Ala Pro His Val  
260 265 270

Cys Arg Pro Ile Thr Val Ala Leu Leu Met Arg Leu Leu Gln Gln Leu  
275 280 285

Thr Gly Ile Thr Pro Ile Leu Val Tyr Leu Gln Ser Ile Phe Asp Ser  
 290 295 300  
 Thr Ala Val Leu Leu Pro Pro Lys Asp Asp Ala Ala Ile Val Gly Ala  
 305 310 315 320  
 Val Arg Leu Leu Ser Val Leu Ile Ala Ala Leu Thr Met Asp Leu Ala  
 325 330 335  
 Gly Arg Lys Val Leu Leu Phe Val Ser Ala Ala Ile Met Phe Ala Ala  
 340 345 350  
 Asn Leu Thr Leu Gly Leu Tyr Ile His Phe Gly Pro Arg Pro Leu Ser  
 355 360 365  
 Pro Asn Ser Thr Ala Gly Leu Glu Ser Glu Ser Trp Gly Asp Leu Ala  
 370 375 380  
 Gln Pro Leu Ala Ala Pro Ala Gly Tyr Leu Thr Leu Val Pro Leu Leu  
 385 390 395 400  
 Ala Thr Met Leu Phe Ile Met Gly Tyr Ala Val Gly Trp Gly Pro Ile  
 405 410 415  
 Thr Trp Leu Leu Met Ser Glu Val Leu Pro Leu Arg Ala Arg Gly Val  
 420 425 430  
 Ala Ser Gly Leu Cys Val Leu Ala Ser Trp Leu Thr Ala Phe Val Leu  
 435 440 445  
 Thr Lys Ser Phe Leu Pro Val Val Ser Thr Phe Gly Leu Gln Val Pro  
 450 455 460  
 Phe Phe Phe Phe Ala Ala Ile Cys Leu Val Ser Leu Val Phe Thr Gly  
 465 470 475 480  
 Cys Cys Val Pro Glu Thr Lys Gly Arg Ser Leu Glu Gln Ile Glu Ser  
 485 490 495  
 Phe Phe Arg Thr Gly Arg Arg Ser Phe Leu Arg  
 500 505



<210> 360  
 <211> 652  
 <212> DNA  
 <213> Homo sapiens

<400> 360  
 cttcggttcg ccgtttcagc ttcccccccta ccccaacctt caccgcgattt tttttgagct 60  
 gaaaaaaaaag tggaacgagg gagccaatct ttggtaactc ggggttttctg tggtaggtgg 120  
 gttcaaaatc tgagctgtag ggagcgctag agatttcgtg cccttttagcc aagctgaggg 180  
 tatttgcaaa ccctgaagat ttccgtctcc gagctttggg cttggtaagc gaagtttgga 240  
 gtcggtgcct aatcgtatat catctaaacc ttgaaaaggc tttgaccttt ggccaatttg 300  
 atttgttctt tgaagaagtg tatacaatgt gtgggaaaat aatatgtgag aggagagaag 360  
 taaatgtgtt gatgttgtga ttgtttatgt gatttaattt ttaatttttt ttttttaggt 420  
 cccacaaact gcaaggaaaa gaaaaaccct caacaggaat tacctttata cctgatgccc 480  
 ccaacataat ctctctccaa gggaaacgtg tttttattgc cttgcggctg tgtattctcg 540  
 attctcccc ttctctcttt tgttgtgcat tttttggatg tggtgagtgt catcagttgc 600  
 tctctaggtt tgacatagat aattaagcaa ctacagcgtg atgcttttga gg 652

<210> 361  
 <211> 18  
 <212> PRT  
 <213> Homo sapiens

<400> 361

Leu Arg Phe Ala Val Ser Ala Ser Pro Leu Pro Gln Pro Ser Pro Asp  
 1 5 10 15

Phe Phe

<210> 362  
 <211> 845  
 <212> DNA  
 <213> Homo sapiens

<400> 362  
 ctcgatctgc tgctcgtctc aggctcgtag ttgcgcttca acatgccgga accagcgaag 60  
 tccgctcccg cgccaagaa gggctcgaag aaagccgtga ctaaggcgca gaagaaggac 120  
 ggcaagaagc gcaagcgcag ccgcaaggag agctactccg tatacgtgta caaggtgctg 180

```

aagcagggtcc accccgacac cggcatctcc tctaaggcca tgggaatcat gaactccttc      240
gtcaacgaca tcttcgaacg catcgcggggt gagggcttccc gcctggcgca ttacaacaag      300
cgctcgacca tcacctccag ggagatccag acggccgtgc gcctgtctgt gcccggggag      360
ttggccaagc acgccgtgtc cgagggcacc aaggccgtca ccaagtacac cagcgctaag      420
taaacttgcc aaggaggac tttctctgga atttctgat atgaccaaga aagcttctta      480
tcaaaagaag cacaattgcc ttcggttacc tcattatcta ctgcagaaaa gaagacgaga      540
atgcaaccat acctagatgg acttttccac aagctaaagc tggcctcttg atctcattca      600
gattccaaag agaatcattt acaagttaat ttctgtctcc ttggtccatt ccttctctct      660
aataatcatt tactgttcct caaagaattg tctacattac ccattctctc ttttgcctct      720
gagaaagagt atataagctt ctgtacccca ctgggggggt ggggtaatat tctgtggtcc      780
tcagccctgt accttaataa atttgtatgc cttttctctt aaaaaaaaaa aaaaaaaaaa      840
aaaaa                                             845

```

```

<210> 363
<211> 126
<212> PRT
<213> Homo sapiens

```

```

<400> 363

```

```

Met Pro Glu Pro Ala Lys Ser Ala Pro Ala Pro Lys Lys Gly Ser Lys
1           5           10           15

```

```

Lys Ala Val Thr Lys Ala Gln Lys Lys Asp Gly Lys Lys Arg Lys Arg
20           25           30

```

```

Ser Arg Lys Glu Ser Tyr Ser Val Tyr Val Tyr Lys Val Leu Lys Gln
35           40           45

```

```

Val His Pro Asp Thr Gly Ile Ser Ser Lys Ala Met Gly Ile Met Asn
50           55           60

```

```

Ser Phe Val Asn Asp Ile Phe Glu Arg Ile Ala Gly Glu Ala Ser Arg
65           70           75           80

```

```

Leu Ala His Tyr Asn Lys Arg Ser Thr Ile Thr Ser Arg Glu Ile Gln
85           90           95

```

Thr Ala Val Arg Leu Leu Leu Pro Gly Glu Leu Ala Lys His Ala Val  
 100 105 110

Ser Glu Gly Thr Lys Ala Val Thr Lys Tyr Thr Ser Ala Lys  
 115 120 125

<210> 364  
 <211> 1032  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (937)..(937)  
 <223> n = unknown

<400> 364  
 gggggaggagg aagggggaag gttaccaagt agatgtatcg cgagccttta aatcctggat 60  
 cgtgccgcgt ggcctacgag aaaggtttta caaaagattc agcattttac tgataacttt 120  
 ttatttttatt tctctctatg agcaaagtat ggagctcgaa gtagttattt tcacttacat 180  
 ttgtaaaagg aaatattgtg atataactat attaataattt acagctgact tttcatctgc 240  
 aggttacaaa acacttgaaa tatataagtt agtgggaactt tgcttgaggt aggtattaac 300  
 tctctttctc agacggaaac tgaggcagaa aagtgttggt tgctagggtc atattaagtc 360  
 agtagcagca ctagtaagga atttgaccac gaggtcagtc gagtggtttt tacctagtta 420  
 atggaatacc tagttaatat agttctaaaa ctactgtatt ggcaatcttg tgccaagaac 480  
 ctgatgacgg aaaccacgag gtaactggga aattcccaaa ttggcgctta agaaaaatac 540  
 tacgagactt gagaatctct taacgtaact tcctaagtgt gagatgacca aattgacttt 600  
 cgggatattc tggcgttaat ttcccgccg ccctaaatgt tgggccaaaa ttcacaagat 660  
 acgttatatt tagcaatttt aacagcgcca ataatatgcg ggggggcgca acctctggtt 720  
 aaaacttata cgtttcaaca cacttgcttg caccttagcg tccactggc tagctgcgga 780  
 cgacgcgggt tttaaaacc cccagtgaga ttggggcgag gtctatgttt ccagccggtt 840  
 gttcgtctca cgctagcgcg gtgccacggg ttaaccctg tgggagagaa cagcctgtac 900  
 ggaccacttg tgggctgaat agtggggatt gcagccttg ggctgagttt agctgacca 960  
 cttggcgtgt gcgcggtgca aacaacatg gctcctcttg cgctgagttg tgctgtctct 1020  
 gctgtctatc tc 1032

<210> 365  
 <211> 52  
 <212> PRT  
 <213> Homo sapiens

<400> 365

Met Leu Gly Gln Asn Ser Gln Asp Thr Leu Tyr Leu Ala Ile Leu Thr  
 1 5 10 15

Ala Pro Ile Ile Cys Gly Gly Ala Gln Pro Leu Val Lys Thr Tyr Thr  
 20 25 30

Phe Gln His Thr Cys Leu His Leu Ser Val Pro Leu Ala Ser Cys Gly  
 35 40 45

Arg Arg Gly Phe  
 50

<210> 366  
 <211> 4222  
 <212> DNA  
 <213> Homo sapiens

<400> 366

ttgttaactt tgtcaaagat caggttgttg taggtttttg gctttatttc taggttctct	60
actttgtttc atttgtctat gtgtctgttt ctataccagt accatgctgt ttttgttact	120
gtactcttct agtatagttt gaagttaggt agagtgcacac ttccagcttt tttttttttt	180
tcttaagggt ggcttggcta tttgggctct tttttggttc catatgaact ttaaaagt	240
ttatttttct aattctctga agaatgtcag tagttcaatg ggaatagcat tgaatctatg	300
aattacttag ggccatatgc ccatattcat gatactgatt cttcctctcc atgagcatgg	360
aatattttct catctgtttt gtgtccactc tgatttctct gagcagttgt ttgtggttct	420
ccttgaagag gtccttcact ttctttctta gctgtattcc taggtatttt tttctctttg	480
tagcaaagt gaatgaaagt tcattcatga tttgtctccc tgcttgccctg ttgtttgtgc	540
atgggaatgc tagctacttt tgcacattga ttttatatcc tgagattttg ctactgttgc	600
ttatcacctt aagaagcttt gggcctgaga caatgagggt ttctagatgt aggatcaggt	660
catctgcaaa caaagataat ttgacttcct ctctttctat tagaatactc tttatttctt	720
cctctggcct gatcttctg gccaaaggct ctgatactat attgaatggg agtggtgaaa	780
gagggcattc ttttcttgtg ccagttttca ggtggaacgt ttctagcttt tgcacattca	840

gtatgatatt	ggctgtgggt	ttgttgata	tggctcttat	tattttcagg	tatgtttctt	900
cacttcctag	tttattgaga	attttaaacc	tgaaagaatg	ctgaatttta	ttggatgctt	960
tttctgcatt	tattgagata	atcatgtgg	ttttgtat	agttctctt	atgtgatgag	1020
tcacatttat	tgatttgc	atgttgaatc	aaccttgcat	cctggggaca	aagccaactc	1080
cattgttg	gatgaactt	ttaatgtg	gctggattt	ttttgccagt	attttattga	1140
ggatttttgc	acagtgttta	ccaaagacat	tggcatgatg	tggtgtgtt	gttgtgtgtg	1200
ttgtagtata	tatgttaggt	tttggatat	ggatgatgct	ggcctgatag	aatgagttag	1260
agagaacttc	tttgtcttca	attttttttg	gatggtttta	ggagaaaagg	taccatctcc	1320
tctttgtacc	tctgctcaaa	ttcagcttgc	ttggtaggct	agtttttact	gcctcagttt	1380
cagaacacat	tattgatcta	ttcagggttc	agtcttgtgg	agggtttatt	ttgcaaggaa	1440
attgtctatt	tcttctagat	tttctggttt	atgtgcatac	atatgtttat	agtgttctct	1500
gattgttgtt	catatttcca	tgggatcagt	gatgatata	cccttattat	ttctaattgt	1560
gtttggttct	cctttctttt	cttatttatt	tgcctagcta	gtgttccatc	tagtttatta	1620
atttttttca	taaaaacagc	tcctggattt	gttgactttt	ttttttggaa	gagttttcag	1680
tgtctctata	tcctcagct	ctactttgat	cttggttatt	tcttgttttc	tgtaccttt	1740
ctggttagtt	ttcacttgg	tttctagt	ttttcatcaa	gatgttaggc	tgttaatttt	1800
agatcttcta	gtttctctt	ttttcttct	tgtggcagag	tctcactctg	tcaccaggc	1860
tggagtacag	tggcatgatc	tcgcctcact	gcaacctcca	cttctcagtt	ttaagtgatt	1920
tctgctgtct	cagcttcctg	agtagctggg	attacagatg	tgcatcacia	aaaccagcta	1980
atttttgaat	tttttttgta	gagggtgggt	tttgttgtgt	ggtccagact	ggtcttgaac	2040
atctggcctt	aagtgatttg	cctaccccag	cctcccaaag	tgctggaact	acaggcatga	2100
gccaccacac	ccagcccttt	ctatcttttt	gatgtggaca	ttagtgctat	aaatttccct	2160
cttttcttgg	tttccagtga	ttattttatt	ctatcttgg	gagtcatac	ggaaataatc	2220
ttaaatttac	aatcaacata	tagtttaa	ccatataatt	gtgtgagaag	aacctttgt	2280
tatttgaagg	tgatgtttga	aagattttct	aacgggtgc	tttagttagt	cttaaatttc	2340
taattgtagt	taaaaacatg	ccattgtcat	ttctgacatt	ttaagtatat	ggtttagaag	2400
tggtagtat	agttctattg	ttttgcagta	ggtttttagat	aatttgtgtc	ttacaaaagt	2460
aaaagtgaat	actcattact	tatgaaagaa	gttagttagc	ttgccttagg	tagatagcaa	2520

gagaagagtc cctggaaagt ccttggtcag tgcctcatcc ctgcataaca tataaagaag	2580
cctggaaaaa atcaagctgc agacactaac aagggaacta gcatatgttg ttgtgcttgg	2640
ggacatgccc gtggctgcac agatagaaaa acctctggcc catttgata aaaacttgta	2700
gaaacctcca gctcactcag ataaaggaac aagaacgacc tagcatagaa atgcctttgt	2760
ttggccaggc acggtggatc atgcctgtaa ttccaacaat gtcggaggca gctgtgggag	2820
gatcatctga ggtcgggagt ttgagaccag catgaccaag atggacaaac tctgtcttta	2880
ctaaaaatac aaaactagcc aggcattggtg ctgcatgcct ataatcccag ctacttggga	2940
ggctgaggca ggagaatcgc tagaaccagc gaggcggagg tttctgtgag ccgagatcgc	3000
accattacac tccaggctgg gcaacaagag caaaactgca aaaaaaata aaaataaata	3060
aaaaaagaaa gtacatctca aaaaaagaa agacaagaaa aagaaaaaaa agaagcactt	3120
ttgtctttgt acagtcagtg ggctcccagg aaaatgttcc ttctcttttt gttggcatgg	3180
gcactgtggg atctggtgca ttccggctga cactctcggt tatttggact gtaagtctga	3240
cctctatgaa taattacttc agaccctgag tgctcccagg ccaagctcct tggccaaact	3300
ttcaccttag cttctgataa gtcttgggac aagctaagca gcatctatca atcatccctt	3360
cagctcctga ttgatcccg gccaaaggcc tgggccaagc tgagccacac gtttttcaag	3420
acagcctgtg aactaggcac atatccttcc cttcccagtc cataaaaacc ctggaccag	3480
cctcgtagag ggcaccactt tcagacacct atctctgctg gcaaagagct ttcttctctt	3540
gcttcttaaa ctttactcc aacctcacct ttgtgttcac gctccttaat ctcttagag	3600
gtagaacaaa gaactctgga tggtatctca gactacgaga gactgttaca tcttgggtga	3660
ctgctgagac tacgacactt gggttctttg agtttgacta aatattttac atgagtgtaa	3720
ttatacagct ttcttttttg actgtcttat ttacttaac agaattgttt gaagatttgt	3780
ccttattgta gtacttttca agatttcctt atttttaagg ctgaatgcta tccagtgat	3840
tgtacgtgcc ctgtttgctg aatctactca tccttaaggg tacatttgct tccaggtaac	3900
atgtttgtga gtaatactac aatgtgcata tatctattcc atgttctgct ttgtctgttt	3960
gggatatttt tcatacactg attcagtacc ttgtgtattc ccttgctttt gttgtctcat	4020
ccgttgatgc tacgtcccc aaattattgc cagaccagt tgtaatgaag cttaccctt	4080
ctgtattgtg ctaggaattt tacagctata gggtttacat tatagtcttc attcattttt	4140
taaaattgac acatgtaatt gtgcataatt tggggaaaca attatatata tgtgttgtat	4200

aacaataaaa atcagtactt ct

4222

<210> 367  
 <211> 197  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 367

Met Ser Met Glu Tyr Phe Ser Ile Cys Phe Val Ser Thr Leu Ile Ser  
 1 5 10 15

Leu Ser Ser Cys Leu Trp Phe Ser Leu Lys Arg Ser Phe Thr Phe Phe  
 20 25 30

Leu Ser Cys Ile Pro Arg Tyr Phe Phe Leu Phe Val Ala Asn Val Asn  
 35 40 45

Glu Ser Ser Phe Met Ile Cys Leu Pro Ala Cys Leu Leu Phe Val His  
 50 55 60

Gly Asn Ala Ser Tyr Phe Cys Thr Leu Ile Leu Tyr Pro Glu Ile Leu  
 65 70 75 80

Leu Leu Leu Leu Ile Thr Leu Arg Ser Phe Gly Pro Glu Thr Met Arg  
 85 90 95

Phe Ser Arg Cys Arg Ile Arg Ser Ser Ala Asn Lys Asp Asn Leu Thr  
 100 105 110

Ser Ser Leu Ser Ile Arg Ile Leu Phe Ile Ser Ser Ser Gly Leu Ile  
 115 120 125

Phe Leu Ala Lys Ala Ser Asp Thr Ile Leu Asn Gly Ser Gly Glu Arg  
 130 135 140

Gly His Ser Phe Leu Val Pro Val Phe Arg Trp Asn Val Ser Ser Phe  
 145 150 155 160

Cys Thr Phe Ser Met Ile Leu Ala Val Gly Leu Leu Tyr Met Ala Leu  
 165 170 175

Ile Ile Phe Arg Tyr Val Ser Ser Leu Pro Ser Leu Leu Arg Ile Leu  
 180 185 190

Asn Leu Lys Glu Cys  
195

<210> 368  
<211> 2406  
<212> DNA  
<213> Homo sapiens

<400> 368  
agtttactct acatcatagc agagaaaatg gacaaaacac agctgttttg catgtaggag 60  
aatactaacc ctgcacagat tgtgatgggtg atgtggaata tactaaagcc tagaacgcac 120  
ctcctctgca tgactaatat gttctgcaca agacatgaag gcacagacag cactgtcttt 180  
cttctcatt ctcataacat ctctgagtggt atctcaaggc atattccctt tggctttctt 240  
catttatgtt cctatgaatg aacaaatcgt cattggaaga cttgatgaag atataattct 300  
ccctttcttca tttgagaggg gatccgaagt cgtaatacac tggaagtatc aagatagcta 360  
taagggtcac agttactaca aaggcagtga ccatttgga agccaagatc ccagatatgc 420  
aaacaggaca tcccttttct ataatgagat tcaaaatggg aatgcgtcgc tatttttcag 480  
aagagtaagc cttctggacg aaggaattta cacctgctat gtaggaacag caattcaagt 540  
gattacaaac aaagtgggtgc taaaggtggg agtttttctc acacccgtga tgaagtatga 600  
aaagaggaac acaaacagct tcttaatatg cagcgtgtta agtgtttatc ctogtccaat 660  
tatcacgtgg aaaatggaca acacacctat ctctgaaaac aacatggaag aaacagggtc 720  
tttggtattct ttttctatta acagcccact gaatattaca ggatcaaatt catcttatga 780  
atgtacaatt gaaaattcac tgctgaagca aacatggaca gggcgtgga cgatgaaaga 840  
tggccttcat aaaatgcaaa gtgaacacgt ttcactctca tgtcaacctg taaatgatta 900  
tttttcacca aaccaagact tcaaagttac ttggtccaga atgaaaagtg ggactttctc 960  
tgtcctggct tactatctga gctctcaca aaatacaatt atcaatgaat ccgattctc 1020  
atggaacaaa gagctgataa accagagtga cttctctatg aatttgatgg atcttaattc 1080  
ttcagacagt ggggaatatt tatgcaatat ttcttcggat gaatatactt tacttaccat 1140  
ccacacagtg catgtagaac cgagccaaga aacagcttcc cataacaaag gcttatggat 1200  
tttggtgccc tctgcgattt tggcagcttt tctgctgatt tggagcgtaa aatggtgcag 1260  
agcccagcta gaagccagga ggagcagaca cctgctgat ggagcccaac aagaaagatg 1320  
ttgtgtccct cctggtgagc gctgtcccag tgcacccgat aatggcgaag aaaatgtgcc 1380



```

tctttcagga aaagtatagg aaatgagaga agactgtgac aactcatgac ctgcatcctt 1440
aatatccagt gacttcatct cccctttctt caccacaatt ccaggcaatg gcctgtcgga 1500
ccagacaatt ctaccactgc aaagagttgt aaccattttc tggatcacaca tttatttttc 1560
aagacatact tttcaagaca tcattcactg acccactacc tgcattgagt ataatgcct 1620
ggatgttaag gattccaatt taactttgaa aagaactgtc tcattcattt acatttctgt 1680
tacagtcagc ccaggagggt acagtgagct ctccactaag aatctggaag aaatgcatca 1740
ctagggggtg attcccaatc tgatcaactg ataatgggtg agagagcagg taagagccaa 1800
agtcacctta gtggaaaggt taaaaaccag agcctggaaa ccaagatgat tgatttgaca 1860
aggtatttta gtctagtttt atatgaacgg ttgtatcagg gtaaccaact cgatttggga 1920
tgaatcttag ggcaccaaag actaagacag tatctttaag attgctaggg aaaagggccc 1980
tatgtgtcag gcctctgagc ccaagccaag catcgcatcc cctgtgattt gcacgtatac 2040
atccagatgg cctaaagtaa ctgaagatcc acaaaagaag taaaaatagc cttaactgat 2100
gacattccac cattgtgatt tgttcctgcc ccaccctaac tgatcaatgt actttgtaat 2160
ctccccacc cttaagaagg tactttgtaa tcttccccac ccttaagaag gttctttgta 2220
attctcccca cccttgagaa tgtactttgt gagatccacc ctgccacaa aacattgctc 2280
ttaacttcac cgcctaacc aaacctata agaactaatg ataatccatc acccttcgct 2340
gactctcttt tcggactcag cccacctgca ccaggtgaa ataaacagct ttattgctca 2400
aaaaaa 2406

```

```

<210> 369
<211> 414
<212> PRT
<213> Homo sapiens

```

```

<400> 369

```

```

Met Lys Ala Gln Thr Ala Leu Ser Phe Phe Leu Ile Leu Ile Thr Ser
1           5           10           15

```

```

Leu Ser Gly Ser Gln Gly Ile Phe Pro Leu Ala Phe Phe Ile Tyr Val
20           25           30

```

```

Pro Met Asn Glu Gln Ile Val Ile Gly Arg Leu Asp Glu Asp Ile Ile
35           40           45

```

Leu Pro Ser Ser Phe Glu Arg Gly Ser Glu Val Val Ile His Trp Lys  
 50 55 60  
 Tyr Gln Asp Ser Tyr Lys Val His Ser Tyr Tyr Lys Gly Ser Asp His  
 65 70 75 80  
 Leu Glu Ser Gln Asp Pro Arg Tyr Ala Asn Arg Thr Ser Leu Phe Tyr  
 85 90 95  
 Asn Glu Ile Gln Asn Gly Asn Ala Ser Leu Phe Phe Arg Arg Val Ser  
 100 105 110  
 Leu Leu Asp Glu Gly Ile Tyr Thr Cys Tyr Val Gly Thr Ala Ile Gln  
 115 120 125  
 Val Ile Thr Asn Lys Val Val Leu Lys Val Gly Val Phe Leu Thr Pro  
 130 135 140  
 Val Met Lys Tyr Glu Lys Arg Asn Thr Asn Ser Phe Leu Ile Cys Ser  
 145 150 155 160  
 Val Leu Ser Val Tyr Pro Arg Pro Ile Ile Thr Trp Lys Met Asp Asn  
 165 170 175  
 Thr Pro Ile Ser Glu Asn Asn Met Glu Glu Thr Gly Ser Leu Asp Ser  
 180 185 190  
 Phe Ser Ile Asn Ser Pro Leu Asn Ile Thr Gly Ser Asn Ser Ser Tyr  
 195 200 205  
 Glu Cys Thr Ile Glu Asn Ser Leu Leu Lys Gln Thr Trp Thr Gly Arg  
 210 215 220  
 Trp Thr Met Lys Asp Gly Leu His Lys Met Gln Ser Glu His Val Ser  
 225 230 235 240  
 Leu Ser Cys Gln Pro Val Asn Asp Tyr Phe Ser Pro Asn Gln Asp Phe  
 245 250 255  
 Lys Val Thr Trp Ser Arg Met Lys Ser Gly Thr Phe Ser Val Leu Ala  
 260 265 270

Tyr Tyr Leu Ser Ser Ser Gln Asn Thr Ile Ile Asn Glu Ser Arg Phe  
 275 280 285

Ser Trp Asn Lys Glu Leu Ile Asn Gln Ser Asp Phe Ser Met Asn Leu  
 290 295 300

Met Asp Leu Asn Leu Ser Asp Ser Gly Glu Tyr Leu Cys Asn Ile Ser  
 305 310 315 320

Ser Asp Glu Tyr Thr Leu Leu Thr Ile His Thr Val His Val Glu Pro  
 325 330 335

Ser Gln Glu Thr Ala Ser His Asn Lys Gly Leu Trp Ile Leu Val Pro  
 340 345 350

Ser Ala Ile Leu Ala Ala Phe Leu Leu Ile Trp Ser Val Lys Cys Cys  
 355 360 365

Arg Ala Gln Leu Glu Ala Arg Arg Ser Arg His Pro Ala Asp Gly Ala  
 370 375 380

Gln Gln Glu Arg Cys Cys Val Pro Pro Gly Glu Arg Cys Pro Ser Ala  
 385 390 395 400

Pro Asp Asn Gly Glu Glu Asn Val Pro Leu Ser Gly Lys Val  
 405 410

<210> 370  
 <211> 415  
 <212> DNA  
 <213> Homo sapiens

<400> 370  
 tggtagctcg tgataccaga ttagaaaaag aactaatagc tatttttcat atatatttat 60  
 atataaataa ttttatagt tgtgtattat atatcatcaa aatatatttg ataattttgt 120  
 gtatgttatt gtatatatta tcttttatat ataaacataa aatttácata caciaatttt 180  
 attaaaatat aaatatattc attgtgtata taaaatatag ctattatata cagtatacaa 240  
 tttaatagct attacggtat gcaatattac atatactgta caatttatat tgtatatatg 300  
 tataaataaa agacatacac atatatatat atcatgtgtt acttaatgat tgggtagtca 360  
 cagaccgatc cgagtagggc cagatatatc gatccctggg gtgggtagtc acaga 415

<210> 371  
 <211> 22  
 <212> PRT  
 <213> Homo sapiens

<400> 371

Leu Gly Ser His Arg Pro Ile Arg Val Gly Pro Asp Ile Arg Ile Pro  
 1 5 10 15

Gly Val Gly Ser His Arg  
 20

<210> 372  
 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<400> 372

tcgccgatatt attaataatt aattgctgtä actataaagc tgaggaattt cagacatgac 60  
 agacagcaaa gaggacagaa gggatcatga aaagtttctg gaaaaggcaa gacctaaact 120  
 ggaacctgga agttaagcag aaccaggggtg tggggagaga ggaacacatc actcaagatg 180  
 gcacagcctg agcggccagg caaatatttc atatgaatgt ggccctgggt tggtgacact 240  
 atgagcaaca tcagatttgg ggaagcaatt aaaaaaaaaa aaaaaattcc acaaaatggt 300  
 ttacagacga tcttgccctat acagctggcc taaaaagcta ggcttagatt tttaaaatct 360  
 cattttctga aaagagttgt tatacctcag tgttgtggcg agaggaataa aagcctcccc 420  
 gcctcattca tgaggaactt cttagaagca catgctctgg gcaacatgcc ccgctagtct 480  
 gagatttctc ctaatgctgc cagaaaccaa cctagtacac gtctctggtc ttccccaaca 540  
 tctcccacgt tcaagctgct accttcagta ccatttctcc ccattcttcta cctttgagat 600  
 atctacctgc aaggactaaa cagg 624

<210> 373  
 <211> 55  
 <212> PRT  
 <213> Homo sapiens

<400> 373

Met Leu Trp Ala Thr Cys Pro Ala Ser Leu Arg Phe Leu Leu Met Leu  
 1 5 10 15

Pro Glu Thr Asn Leu Val His Val Ser Gly Leu Pro Gln His Leu Pro

20

25

30

Arg Ser Ser Cys Tyr Leu Gln Tyr His Phe Ser Pro Ser Ser Thr Phe  
           35                          40                          45

Glu Ile Ser Thr Cys Lys Asp  
       50                          55

<210> 374  
 <211> 440  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (162)..(162)  
 <223> n = unknown

<400> 374  
 catttgaagt aaaaatcttt aatttgaact tatttaatag attatttttaa tttttgaaca 60  
 agcataaagg tgccaattta attatctgtg ggatttaaaa acttcaacag agaaagaaaa 120  
 taggaggtac tagtgagaaa tatattttac agtctacata tntattgtat aataagctat 180  
 attatattct aataacagca aatataacat tataatgatt ttgatatctg gactcgctag 240  
 acttgggtccc ataaatccta tagttcttaa caaaaaaacc catccgtag caaacttaca 300  
 catctaagct cagtttaatg caacttaatg agacattgaa ttttatgcag ctaaccaag 360  
 ttatctatag tgtgtgccct cctgagtacc ccaggaaata gaagtaaaga actgacgaac 420  
 atcagatcca actggcccat 440

<210> 375  
 <211> 30  
 <212> PRT  
 <213> Homo sapiens

<400> 375

Met Ile Leu Ile Ser Gly Leu Ala Arg Leu Gly Pro Ile Asn Pro Ile  
 1                  5                          10                          15

Val Leu Asn Lys Lys Thr His Pro Leu Ala Asn Leu His Ile  
           20                          25                          30

<210> 376

<211> 348  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (315)..(315)  
 <223> n = unknown

<400> 376  
 tttttttttt ttttttgggg caggggattc tgctgcggaac cctgagtctt aggaaggagg 60  
 cttataacag cggaagacca ttttttttta agaattgctg agttttccgg attggacttt 120  
 caaagacttt ccctgaaact ttgcgtggca tgggggttgc agaaactggt gtctacacat 180  
 tacaaaagtg tactgtttac acctatttgt gatgcacca tcgtgttttt ctccatggac 240  
 cacctattaa gcttcctgct ggagcgctct tggccccctt cctgctttct gggccacatc 300  
 ctgttgtaaa tcgngctac ttgtggggtt ttgtttgtga attgggga 348

<210> 377  
 <211> 32  
 <212> PRT  
 <213> Homo sapiens

<400> 377

Phe Phe Phe Phe Leu Gly Gln Gly Ile Leu Leu Arg Thr Leu Ser Leu  
 1 5 10 15

Arg Lys Glu Ala Tyr Asn Ser Gly Lys Pro Phe Phe Phe Lys Asn Cys  
 20 25 30

<210> 378  
 <211> 2629  
 <212> DNA  
 <213> Homo sapiens

<400> 378  
 gtggagctgg tggccagcac caagaacact tttcaaagtc aggagaaact tataaaggaa 60  
 atggactatt tatgggaaat caatcaagag acaagaaaca atctaaatca ggaaactagc 120  
 acatttcatt cgttaaagga ctatgtgtca gtaaggaaga ggataatcac tattcaatat 180  
 caaaagatgc ctatatttct cgatgaggag gagcaacggc atctgcaggc actggaaaga 240  
 gaagcagaag agctttttcca acaactacaa gacagtcaag tgagaatgac ccaacattta 300  
 gaaaggatga aagacatgta cagagagctg tgggagacat gccacatgcc tgacgtggtg 360

ctgctccagg atgtgagaaa tgtatcagca aggactgatt tggcacagat gcaaaagccc	420
cagccagtga acccagagct cacttcatgg tgcataactg gagtcctaga catgctcaac	480
aacttcagag tggatagtgc tctgagcacg gaaatgattc cttgctatat aagcctttct	540
gaggatgtga gatatgtgat atttggagat gaccatctca gtgctccac ggatccccag	600
ggagtggaca gctttgctgt gtggggagcg caagcattca cctccggcaa gcattactgg	660
gaggtggatg tgaccctctc ctccaactgg attctgggag tctgtcaaga ttccaggact	720
gcagatgcca atttcgttat tgattctgat gaaagatfff ttttaatttc ctcaaagagg	780
agcaatcact atagtctctc caccaactct ccaccttaaa ttcagtatgt gcaaaaggct	840
ctgggtcggg ttgggggtgtt tctggattat gataatggat ctgtgagttt ttttgatgtt	900
tctaaagggt ctcttatcta tggttttcct ccttctctct tctcgtcccc tctgaggcct	960
ttcttttgct ttggttgtag atgaaaagt gggttcatga tgatttattg tgacctccca	1020
tatataaggc aaatactgtc ctaagacact atgtgtgaga gcctgtgagc gcactgtaac	1080
ttcatggaat gtgattactt tatgggtata aatgggataa ccaccttgaa tgtatacatt	1140
cattaattaa gttattttaa ttaataaatt attgtggaat cttactaga acatcaataa	1200
tggctttttt tgtacaagtt ttttgagatt cattcactta ctgtgaaagt catgtttctaa	1260
tgtatttaat tcagagattg ttagtatatc acacttgagc agccatcaga gctctcttct	1320
gcctgggcac ttttatcact tccagaagaa tcccaatacc ccttaacatt tattctgcat	1380
tcacctccc ccattccttc agaacactta atctactttt tatgtttttg cattcgggta	1440
aataaaatca tacaacataa gttctttttt taatctgatt tatttttcag agagtatgtt	1500
ttcagtttgt gcacactgta aaccatttgt ctacttgta tatttgaacc aggctgggggt	1560
agaaaaatga actggtggat atctcatctt acaaagaata aagaagtgtg cttattttct	1620
ttctaagtct gaccaagtta agttgacctc acagacttta ttatttctca acatcctagt	1680
tattaatctc atttcagctc atacaaaagt ttttcagtgc tgggttgctc tgctattaca	1740
tcttctcaag tatattatat cagattataa cattcagaaa actcttatac ttattactac	1800
cagattgaaa agtccaaggg ggcaatggca gtatttgtct tctttgctaa tatattacca	1860
ttatcgaatg cgatttttag aatagattac acaataaata agatgaataa atggattaag	1920
tagaggagtt agtatgtata aatattatct taacattgag aaacttttcc aaaatgtacg	1980
taacaaaata ggatagaaca tactaatgaa tatctatcaa aagataagac ataaattgat	2040

```

tttcagattg atatcaaaga taatactatt atgttagggg ttaaaataat thtagcataa 2100
tttttatagg gttgatttca attgtcttag gttttttaat ataaaccttt gaaagatgaa 2160
ggttcctata taagatgatg gggtagagga gcaggactta gaatagtgga gactggcctt 2220
aaactgacat ataaatttaa ttacttgcta agcataaagt ggtataaacc ttcctatgca 2280
gtagaaagaa caaaattagt ttacacttta aataagaatc cagatgggct gggcgcggtg 2340
gctcacgcct gtaatccag cactttggga ggccgaggcg ggcggatcac aaggtcagga 2400
gatcgagacc atcttggtta acacggtgaa acccgtctc tactaaaaat aaaaaaaaaa 2460
ttagccgggc gcggtggcgg gcgcctgtag tcccagctac tcgggaggct gaggcaggag 2520
aatggcgtga acctgggagg cggggcttgc agtgagccaa gattgtgcca ctgcaatccg 2580
gcctgggcta aagagcggga ctccgtctca aaaaaaaaaa aaaaaaaaaa 2629

```

<210> 379  
 <211> 307  
 <212> PRT  
 <213> Homo sapiens

<400> 379

```

Met Asp Tyr Leu Trp Glu Ile Asn Gln Glu Thr Arg Asn Asn Leu Asn
1      5      10      15

```

```

Gln Glu Thr Ser Thr Phe His Ser Leu Lys Asp Tyr Val Ser Val Arg
      20      25      30

```

```

Lys Arg Ile Ile Thr Ile Gln Tyr Gln Lys Met Pro Ile Phe Leu Asp
      35      40      45

```

```

Glu Glu Glu Gln Arg His Leu Gln Ala Leu Glu Arg Glu Ala Glu Glu
      50      55      60

```

```

Leu Phe Gln Gln Leu Gln Asp Ser Gln Val Arg Met Thr Gln His Leu
      65      70      75      80

```

```

Glu Arg Met Lys Asp Met Tyr Arg Glu Leu Trp Glu Thr Cys His Met
      85      90      95

```

```

Pro Asp Val Val Leu Leu Gln Asp Val Arg Asn Val Ser Ala Arg Thr
      100      105      110

```



Asp Leu Ala Gln Met Gln Lys Pro Gln Pro Val Asn Pro Glu Leu Thr  
 115 120 125  
 Ser Trp Cys Ile Thr Gly Val Leu Asp Met Leu Asn Asn Phe Arg Val  
 130 135 140  
 Asp Ser Ala Leu Ser Thr Glu Met Ile Pro Cys Tyr Ile Ser Leu Ser  
 145 150 155 160  
 Glu Asp Val Arg Tyr Val Ile Phe Gly Asp Asp His Leu Ser Ala Pro  
 165 170 175  
 Thr Asp Pro Gln Gly Val Asp Ser Phe Ala Val Trp Gly Ala Gln Ala  
 180 185 190  
 Phe Thr Ser Gly Lys His Tyr Trp Glu Val Asp Val Thr Leu Ser Ser  
 195 200 205  
 Asn Trp Ile Leu Gly Val Cys Gln Asp Ser Arg Thr Ala Asp Ala Asn  
 210 215 220  
 Phe Val Ile Asp Ser Asp Glu Arg Phe Phe Leu Ile Ser Ser Lys Arg  
 225 230 235 240  
 Ser Asn His Tyr Ser Leu Ser Thr Asn Ser Pro Pro Leu Ile Gln Tyr  
 245 250 255  
 Val Gln Arg Pro Leu Gly Arg Val Gly Val Phe Leu Asp Tyr Asp Asn  
 260 265 270  
 Gly Ser Val Ser Phe Phe Asp Val Ser Lys Gly Ser Leu Ile Tyr Gly  
 275 280 285  
 Phe Pro Pro Ser Ser Phe Ser Ser Pro Leu Arg Pro Phe Phe Cys Phe  
 290 295 300  
 Gly Cys Thr  
 305

<210> 380  
 <211> 720  
 <212> DNA  
 <213> Homo sapiens

<400> 380  
 tgggtcagac ccacgcgtcc ggagcgggtgt agagcgagca ggtctcagct cctcgtcatg 60  
 tcatacggtc ccttagacat gtaccggaac ccggggccct cggggcccca gctccgggac 120  
 ttcagcagca tcatccagac gtgcagcggc aacatccagc ggatcagcca agccactgct 180  
 cagataaaga atttgatgag ccagctagga actaagcagg actcaagcaa gctacaggaa 240  
 aatctgcaac agttacaaca ctccacaaat cagctcgcca aggaaacaaa tgaattgctg 300  
 aaagaattag ggtccttgcc ccttccctta tctacttcag aacagcgcca gcagagactt 360  
 cagacggcac gcctcatgaa tgactttctt gcagccttaa acaatttcca ggctgtgcag 420  
 agcaagggta tctgacacag gacacaggcg agtattgcca cgagccaaga gctggcatct 480  
 ccgtctctcc tgcccgacag agcaggcccc agagcaggag ccagctgcgt ctgattccga 540  
 ccagcccatg cagcgagtcg ccaccacga tgcccgacc cacggcaggc atccaccgcg 600  
 cgccatcacc tgcacccccg caccgcgcg cacctccact ccacccaac ccgacccaac 660  
 cccggcacac ccccgccac cctgccaggc ctgcaccccc ccccgcccc tccccaccc 720

<210> 381  
 <211> 1175  
 <212> DNA  
 <213> Homo sapiens

<400> 381  
 cccgctctca ggcactgctg gagaaccgag accgacttct ttctctttac cctcattggc 60  
 gcttctctcc tgcagtcgc ctctgggccc tgccgcattt cttgagactt aaagtggcat 120  
 tctaaaggca atttaaaaat catgtcaagc tcagttgaac agaaaaaagg gcctacaaga 180  
 cagcgcaa at gtggcttttg taagtcaaat agagacaagg aatgtggaca gttactaata 240  
 tctgaaaacc agaaggtggc agcgcacat aagtgcagtc tcttttcac tgctttggta 300  
 tcatcacact ctgataatga aagtcttggg ggattttcta ttgaagatgt ccaaaaggaa 360  
 attaaaagag gcacgaagct gatgtgttct ttgtgccatt gtcctggagc acaattggg 420  
 tgtgatgtga aaacatgtca caggacatac cactaccact gtgcattgca tgataaagct 480  
 caaatacgag agaaaccttc acaaggaatt tacatggcct attgccgaaa acacaagaaa 540  
 actgcacata actccgaagc agctgattta gaagaaagtt ttaatgaaca tgaactggag 600  
 ccctcatcac ctaaaagtaa aaagaaaagt cgcaaaggaa ggccaagaaa aactaatttt 660  
 aaagggctgt cagaagatac caggtccaca tcctcccatg gaacagatga aatggaaagt 720

```

agttcctata gagataggtc tccacacaga agcagcccta gtgacaccag gcctaaatgt      780
ggattttgcc atgtagggga ggaagaaaat 'gaagcacgag gaaaactgca tatatttaat      840
gccaagaagg cagctgcccc ttataagtgc atgttgTTTT cttctggcac agtccagctc      900
acaacaacat caagagcaga atttggagac tttgatatta aaactgtact tcaggagatt      960
aaacgaggaa aaagaatggt ctgtagtttt tatatttggt atgcaacatt acacttgatt     1020
tgctgcttta aatttagagt acatcccaaa tttatccagt catcagaaaa tttaaagtag     1080
ttcgtatgtt aaagcaaagt atatatTTTga cttatttgta atataataaa ggatgctgat     1140
gttacggaaa aaaaaaaaaa aaaaaaaaaa aaaaaa                                1175

```

<210> 382  
 <211> 125  
 <212> PRT  
 <213> Homo sapiens

<400> 382

```

Met Ser Tyr Gly Pro Leu Asp Met Tyr Arg Asn Pro Gly Pro Ser Gly
1          5          10          15

Pro Gln Leu Arg Asp Phe Ser Ser Ile Ile Gln Thr Cys Ser Gly Asn
          20          25          30

Ile Gln Arg Ile Ser Gln Ala Thr Ala Gln Ile Lys Asn Leu Met Ser
          35          40          45

Gln Leu Gly Thr Lys Gln Asp Ser Ser Lys Leu Gln Glu Asn Leu Gln
          50          55          60

Gln Leu Gln His Ser Thr Asn Gln Leu Ala Lys Glu Thr Asn Glu Leu
65          70          75          80

Leu Lys Glu Leu Gly Ser Leu Pro Leu Pro Leu Ser Thr Ser Glu Gln
          85          90          95

Arg Gln Gln Arg Leu Gln Thr Ala Arg Leu Met Asn Asp Phe Ser Ala
          100          105          110

Ala Leu Asn Asn Phe Gln Ala Val Gln Ser Lys Gly Ile
          115          120          125

```

<210> 383  
 <211> 312  
 <212> PRT  
 <213> Homo sapiens

<400> 383

Met Ser Ser Ser Val Glu Gln Lys Lys Gly Pro Thr Arg Gln Arg Lys  
 1 5 10 15

Cys Gly Phe Cys Lys Ser Asn Arg Asp Lys Glu Cys Gly Gln Leu Leu  
 20 25 30

Ile Ser Glu Asn Gln Lys Val Ala Ala His His Lys Cys Met Leu Phe  
 35 40 45

Ser Ser Ala Leu Val Ser Ser His Ser Asp Asn Glu Ser Leu Gly Gly  
 50 55 60

Phe Ser Ile Glu Asp Val Gln Lys Glu Ile Lys Arg Gly Thr Lys Leu  
 65 70 75 80

Met Cys Ser Leu Cys His Cys Pro Gly Ala Thr Ile Gly Cys Asp Val  
 85 90 95

Lys Thr Cys His Arg Thr Tyr His Tyr His Cys Ala Leu His Asp Lys  
 100 105 110

Ala Gln Ile Arg Glu Lys Pro Ser Gln Gly Ile Tyr Met Ala Tyr Cys  
 115 120 125

Arg Lys His Lys Lys Thr Ala His Asn Ser Glu Ala Ala Asp Leu Glu  
 130 135 140

Glu Ser Phe Asn Glu His Glu Leu Glu Pro Ser Ser Pro Lys Ser Lys  
 145 150 155 160

Lys Lys Ser Arg Lys Gly Arg Pro Arg Lys Thr Asn Phe Lys Gly Leu  
 165 170 175

Ser Glu Asp Thr Arg Ser Thr Ser Ser His Gly Thr Asp Glu Met Glu  
 180 185 190

Ser Ser Ser Tyr Arg Asp Arg Ser Pro His Arg Ser Ser Pro Ser Asp

195	200	205
Thr Arg Pro Lys Cys Gly Phe Cys His Val Gly Glu Glu Glu Asn Glu		
210	215	220
Ala Arg Gly Lys Leu His Ile Phe Asn Ala Lys Lys Ala Ala Ala His		
225	230	235 240
Tyr Lys Cys Met Leu Phe Ser Ser Gly Thr Val Gln Leu Thr Thr Thr		
	245	250 255
Ser Arg Ala Glu Phe Gly Asp Phe Asp Ile Lys Thr Val Leu Gln Glu		
	260	265 270
Ile Lys Arg Gly Lys Arg Met Val Cys Ser Phe Tyr Ile Cys Tyr Ala		
	275	280 285
Thr Leu His Leu Ile Cys Cys Phe Lys Phe Arg Val His Pro Lys Phe		
	290	295 300
Ile Gln Ser Ser Glu Asn Leu Lys		
305	310	

<210> 384  
 <211> 589  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (1)..(589)  
 <223> n = unknown

<400> 384  
 gagaatgggt agatatgatt gaggatgcag cccatgagac tgttcccatt atgctggtag 60  
 gaaacaaggc tgacattcgt gacactgctg ctacagaggg acaaaaatgt gtcccagggc 120  
 actttggaga gaaactggcc atgacgtatg gggcattatt ctgtgaaaca agtgccaaag 180  
 atggttctaa catagtggag gctgttctgc accttgctcg agaagtgaaa aagagaactg 240  
 acaaggatga cagcagatcc attaccaatc taaccgggac caattccaaa aagtcaccac 300  
 agatgaagaa ttgttgcaat ggctaaatcc caaacatcct tggcctgtga agtcttcatt 360  
 tccagaatac tgaatttgtg tgacttattt gggctttaac agagtgggca catcctactg 420

acactgtcct tggggagttt acagtgcagg ganacctgaa cccggttctc aggtncctct 480  
 ggaacttttg gtcttctttg ttttgtctca gtgagtgnntt gggcctctgn taaataggtn 540  
 gtctgtctta caggtnntaa aggttanctg taatgttttt aaatggtaa 589

<210> 385  
 <211> 103  
 <212> PRT  
 <213> Homo sapiens

<400> 385

Met Ile Glu Asp Ala Ala His Glu Thr Val Pro Ile Met Leu Val Gly  
 1 5 10 15  
 Asn Lys Ala Asp Ile Arg Asp Thr Ala Ala Thr Glu Gly Gln Lys Cys  
 20 25 30  
 Val Pro Gly His Phe Gly Glu Lys Leu Ala Met Thr Tyr Gly Ala Leu  
 35 40 45  
 Phe Cys Glu Thr Ser Ala Lys Asp Gly Ser Asn Ile Val Glu Ala Val  
 50 55 60  
 Leu His Leu Ala Arg Glu Val Lys Lys Arg Thr Asp Lys Asp Asp Ser  
 65 70 75 80  
 Arg Ser Ile Thr Asn Leu Thr Gly Thr Asn Ser Lys Lys Ser Pro Gln  
 85 90 95  
 Met Lys Asn Cys Cys Asn Gly  
 100

<210> 386  
 <211> 1101  
 <212> DNA  
 <213> Homo sapiens

<400> 386  
 atttgaggaa ccatgtctcc atccccgacc gccctcttct gtcttgggct gtgtctgggg 60  
 cgtgtgccag cgcagagtgg accgctcccc aagccctccc tccaggctct gccagctcc 120  
 ctggtgcccc tggagaagcc agtgaccctc cggtgccagg gacctccggg cgtggacctg 180  
 taccgcctgg agaagctgag ttccagcagg taccaggatc aggcagtcct cttcatcccg 240

```

gccatgaaga gaagtctggc tggacgctac cgctgctcct accagaacgg aagcctctgg      300
tccctgccca gcgaccagct ggagctcggt gccacgggag tttttgccaa accctcgctc      360
tcagcccagc ccggcccggc ggtgtcgtca ggaggggacg taacctaca gtgtcagact      420
cggtatggct ttgaccaatt tgctctgtac aaggaagggg accctgcgcc ctacaagaat      480
cccgagagat ggtaccgggc tagtttcccc atcatcacgg tgaccgccgc ccacagcgga      540
acctaccgat gctacagctt ctccagcagg gaccataacc tgtggtcggc cccagcgac      600
ccctggagc ttgtggtcac aggaacctct gtgaccccca gccggttacc aacagaacca      660
ccttcctcgg tagcagaatt ctcagaagcc accgctgaac tgaccgtctc attcacaac      720
aaagtcttca caactgagac ttctaggagt atcaccacca gtccaaagga gtcagactct      780
ccagctggtc ctgcccggca gtactacacc aagggaacc ttgtccggat atgcctcggg      840
gctgtgatcc taataatcct ggcggggttt ctggcagagg actggcacag ccggaggaa      900
cgctgcggc acaggggcag ggctgtgcag aggcgcttc cggccctgcc gccctccc      960
cagaccogga aatcacacgg gggtcaggat ggagggcgac aggatgttca cagccgcggg    1020
ttatgttcat gaccgctgaa cccagggcac ggtcgtatcc aaggaggga tcatggcatg    1080
ggaggcgact caatcactag t                                           1101

```

<210> 387  
 <211> 339  
 <212> PRT  
 <213> Homo sapiens

<400> 387

```

Met Ser Pro Ser Pro Thr Ala Leu Phe Cys Leu Gly Leu Cys Leu Gly
1           5           10           15

```

```

Arg Val Pro Ala Gln Ser Gly Pro Leu Pro Lys Pro Ser Leu Gln Ala
          20           25           30

```

```

Leu Pro Ser Ser Leu Val Pro Leu Glu Lys Pro Val Thr Leu Arg Cys
35           40           45

```

```

Gln Gly Pro Pro Gly Val Asp Leu Tyr Arg Leu Glu Lys Leu Ser Ser
50           55           60

```

```

Ser Arg Tyr Gln Asp Gln Ala Val Leu Phe Ile Pro Ala Met Lys Arg
65           70           75           80

```

Ser Leu Ala Gly Arg Tyr Arg Cys Ser Tyr Gln Asn Gly Ser Leu Trp  
                                     85                                    90                                    95

Ser Leu Pro Ser Asp Gln Leu Glu Leu Val Ala Thr Gly Val Phe Ala  
                                     100                                    105                                    110

Lys Pro Ser Leu Ser Ala Gln Pro Gly Pro Ala Val Ser Ser Gly Gly  
                                     115                                    120                                    125

Asp Val Thr Leu Gln Cys Gln Thr Arg Tyr Gly Phe Asp Gln Phe Ala  
                                     130                                    135                                    140

Leu Tyr Lys Glu Gly Asp Pro Ala Pro Tyr Lys Asn Pro Glu Arg Trp  
                                     145                                    150                                    155                                    160

Tyr Arg Ala Ser Phe Pro Ile Ile Thr Val Thr Ala Ala His Ser Gly  
                                     165                                    170                                    175

Thr Tyr Arg Cys Tyr Ser Phe Ser Ser Arg Asp Pro Tyr Leu Trp Ser  
                                     180                                    185                                    190

Ala Pro Ser Asp Pro Leu Glu Leu Val Val Thr Gly Thr Ser Val Thr  
                                     195                                    200                                    205

Pro Ser Arg Leu Pro Thr Glu Pro Pro Ser Ser Val Ala Glu Phe Ser  
                                     210                                    215                                    220

Glu Ala Thr Ala Glu Leu Thr Val Ser Phe Thr Asn Lys Val Phe Thr  
                                     225                                    230                                    235                                    240

Thr Glu Thr Ser Arg Ser Ile Thr Thr Ser Pro Lys Glu Ser Asp Ser  
                                     245                                    250                                    255

Pro Ala Gly Pro Ala Arg Gln Tyr Tyr Thr Lys Gly Asn Leu Val Arg  
                                     260                                    265                                    270

Ile Cys Leu Gly Ala Val Ile Leu Ile Ile Leu Ala Gly Phe Leu Ala  
                                     275                                    280                                    285

Glu Asp Trp His Ser Arg Arg Lys Arg Leu Arg His Arg Gly Arg Ala  
                                     290                                    295                                    300



Val Gln Arg Pro Leu Pro Pro Leu Pro Pro Leu Pro Gln Thr Arg Lys  
 305 310 315 320

Ser His Gly Gly Gln Asp Gly Gly Arg Gln Asp Val His Ser Arg Gly  
 325 330 335

Leu Cys Ser

<210> 388  
 <211> 1226  
 <212> DNA  
 <213> Homo sapiens

<400> 388  
 ggcacgaggc agggctggtt tcatccctgt gctaggcttt ctgtgaggat gagcagcacc 60  
 gggatagaca ggaagggcgt cctggctaac cgggtagccg tggtcacggg gtccaccagt 120  
 gggatcggct ttgccatcgc ccgacgtctg gcccggaagc gggcccacgt ggtcatcagc 180  
 agccggaagc agcagaacgt ggaccgggac atggccaagc tgcaggggga ggggctgagt 240  
 gtggcgggca ttgtgtgcca cgtggggaag gctgaggacc gggagcagct ggtggccaag 300  
 gccctggagc actgtggggg cgtcgacttc ctggtgtgca gcgcaggggt caaccctctg 360  
 gtagggagca ctctggggac cagttagcag atctgggaca agatcctaag tgtgaacgtg 420  
 aagtccccag cctgtctgct gagccagttg ctgccctaca tggagaacag gaggggtgct 480  
 gtcacacctg tctcttccat tgcagcttat aatccagtag tggcgtctgg tgtctacaat 540  
 gtcagcaaga cagcgtctgct gggctctact agaactctg cattggagct ggcccccaag 600  
 gacatccggg taaactgcgt ggttccagga attatcaaaa ctgacttcag caaagtgttt 660  
 catgggaatg agtctctctg gaagaacttc aaggaacatc atcagctgca gaggattggg 720  
 gagtcagagg actgtgcagg aatcgtgtcc ttctgtgtg ctccagatgc cagctacgtc 780  
 aacggggaga acattgcggt ggcaggctac tccactcggc tctgagagga gtgggggcgg 840  
 ctgcgtagct gtgtcccgag gccagggagc ctgagggggg gtctaggtga tcatttggat 900  
 ctggaggcag agtctgccat tctgccagac tagcaatttg ggggcttact catgctaggc 960  
 ttgaggaaga agaaaaacgc ttcggcattc tccttaggac ttatctgctt gtagatttgg 1020  
 ctgatccaat taacatgtgg ggttcttggt gtgggtctgg ggagctgaag gattttatgg 1080  
 agctggtgct ttggaggaat cttaagggaagg agtagtagaa gctcaggcct ttgaaggatt 1140

tcagctcctc ctctctgtaa ttgtgcttt aagcattttt tttcctaaaa taaactcaaa 1200  
 tttatcctca aaaaaaaaaa aaaaaa 1226

<210> 389  
 <211> 258  
 <212> PRT  
 <213> Homo sapiens

<400> 389

Met Ser Ser Thr Gly Ile Asp Arg Lys Gly Val Leu Ala Asn Arg Val  
 1 5 10 15

Ala Val Val Thr Gly Ser Thr Ser Gly Ile Gly Phe Ala Ile Ala Arg  
 20 25 30

Arg Leu Ala Arg Asp Gly Ala His Val Val Ile Ser Ser Arg Lys Gln  
 35 40 45

Gln Asn Val Asp Arg Ala Met Ala Lys Leu Gln Gly Glu Gly Leu Ser  
 50 55 60

Val Ala Gly Ile Val Cys His Val Gly Lys Ala Glu Asp Arg Glu Gln  
 65 70 75 80

Leu Val Ala Lys Ala Leu Glu His Cys Gly Gly Val Asp Phe Leu Val  
 85 90 95

Cys Ser Ala Gly Val Asn Pro Leu Val Gly Ser Thr Leu Gly Thr Ser  
 100 105 110

Glu Gln Ile Trp Asp Lys Ile Leu Ser Val Asn Val Lys Ser Pro Ala  
 115 120 125

Leu Leu Leu Ser Gln Leu Leu Pro Tyr Met Glu Asn Arg Arg Gly Ala  
 130 135 140

Val Ile Leu Val Ser Ser Ile Ala Ala Tyr Asn Pro Val Val Ala Leu  
 145 150 155 160

Gly Val Tyr Asn Val Ser Lys Thr Ala Leu Leu Gly Leu Thr Arg Thr  
 165 170 175

Leu Ala Leu Glu Leu Ala Pro Lys Asp Ile Arg Val Asn Cys Val Val  
 180 185 190

Pro Gly Ile Ile Lys Thr Asp Phe Ser Lys Val Phe His Gly Asn Glu  
 195 200 205

Ser Leu Trp Lys Asn Phe Lys Glu His His Gln Leu Gln Arg Ile Gly  
 210 215 220

Glu Ser Glu Asp Cys Ala Gly Ile Val Ser Phe Leu Cys Ser Pro Asp  
 225 230 235 240

Ala Ser Tyr Val Asn Gly Glu Asn Ile Ala Val Ala Gly Tyr Ser Thr  
 245 250 255

Arg Leu

<210> 390  
 <211> 605  
 <212> DNA  
 <213> Homo sapiens

<400> 390  
 agcgaagact gaagtgtgac ataaatacat catctccaca caagtccac aaactcaggt 60  
 gtgtcacttg ggggaaacaa gtcgaacaaa ctgaggtgtg tcacttgggg gaaaaatgag 120  
 gcttttccag tccagagagg ccacccccac ccaacttgag aaaagaaaaa tagctcagat 180  
 cagtctgagc tatgcgaaat gtatcaggcc caggagagact gtacagtga taggggactt 240  
 cggtcacacg cctcctccac ccatgccoga ggcagtgggt cctgcacagc tgccctcccc 300  
 attagcttct tgttcctgga atttgtgata caataaacag tgcatagcca attaatacct 360  
 tctgttatct ttttttctga gccagacctg cagatacctt atgctgtttc aatgtaaatt 420  
 cttggtaaca atttaggaac tctctcttct ttgttcctta aaaatccact tgcagactgg 480  
 gtgcgttggc tcatgcctat aatcccagca ctatgggagg ccgaagtggg tggaggatca 540  
 cttgaggcca ggagtttgag accagcctgg acaatatagt gagacttcat ctcttaaaaa 600  
 aaaaa 605

<210> 391  
 <211> 63  
 <212> PRT

<213> Homo sapiens

<400> 391

Met Lys Ser His Tyr Ile Val Gln Ala Gly Leu Lys Leu Leu Ala Ser  
1 5 10 15

Ser Asp Pro Pro Pro Thr Ser Ala Ser His Ser Ala Gly Ile Ile Gly  
20 25 30

Met Ser Gln Arg Thr Gln Ser Ala Ser Gly Phe Leu Arg Asn Lys Glu  
35 40 45

Glu Arg Val Pro Lys Leu Leu Pro Arg Ile Tyr Ile Glu Thr Ala  
50 55 60

<210> 392

<211> 297

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (219)..(294)

<223> n = unknown

<400> 392

tttttttttt tttttttttt tttttttttt tttttttttt taaaaggaaa cccccgtaat 60  
gatgtccggg ttgagggata ggaggaaaat gggggatagg ggttttaccc tgaggggggtt 120  
tcccccggtg aatgaggggt ttctgttggt aatggggggg gggaccggcc cccctctgct 180  
ttgcgccacc cttaaaaggg actttaggcc ctagaccana accttgcccc cccccccaa 240  
gaaacgttcc ttcataaga aaacgggggt cccccccca aaaccccccc cctntcg 297

<210> 393

<211> 51

<212> PRT

<213> Homo sapiens

<400> 393

Met Met Ser Gly Leu Arg Asp Arg Arg Lys Met Gly Asp Arg Gly Phe  
1 5 10 15

Thr Leu Arg Gly Phe Pro Pro Val Asn Glu Gly Phe Leu Leu Leu Met  
20 25 30

Gly Gly Gly Thr Gly Pro Pro Leu Leu Cys Ala Thr Leu Lys Arg Asp  
 35 40 45

Phe Arg Pro  
 50

<210> 394  
 <211> 263  
 <212> DNA  
 <213> Homo sapiens

<400> 394  
 tcatctgaag gcatacatca tggatccag cagagaagtg atgaccactg ggtgtggttt 60  
 aggtgatcct ccagatgtgt gagcaattgt agctggccat aagaagattt cctggctgcc 120  
 cataagctgc cttttgtga ggcccttcag ctaactatct ctccactgca gcagtagatc 180  
 agttcagaag aaaactgtac attcccagca agaatgccaa cagaaacaaa tggttgctat 240  
 ttaaaataaa tagtggttaa acg 263

<210> 395  
 <211> 738  
 <212> DNA  
 <213> Homo sapiens

<400> 395  
 ttttaattaga tatctcttag aataatacag gtttttgttt aactccaatg cattatagac 60  
 ataagattat taacacttta aggaaaacat aggagaatat tcttccaaac ttaggataaa 120  
 tgctaaaaac attgaccata caagcaaaga ttaaattagc ctatattaat cataataact 180  
 gtttatcgca catgtacccc ttaacctaaa agatgaagaa gaaaataaaa aataaaataa 240  
 aatttgaaga aaatgttaaa caaaaatgaa accataccag tactagaaga aaaatgggtg 300  
 aattcctctt taacctaggc aaaggaaagg cttctctggc tccaatctg gatttaatta 360  
 atcctaaagt tgtatagaat cacaaaatac ctcaaatagc caaaacaatc ctgagcaaag 420  
 agaacaaagc tggaggtatc aactaccag atgccaaaat atcctgcaa gctgtagtaa 480  
 ccaaaacagc attatactgg catacaaata gacatataga gcaatggaac agaatagcga 540  
 acacagaaat taatccaaat atctgtaacc aactgatttt gacaaatgtg ccaacaacac 600  
 tctttaggaa aaggatagtc tctttaaaaa atgggtgctgt gtaactaga tatccgtatg 660  
 caaaggctga actagaaccg acctttcacc taagtaaaaa tcatcaaatg gtaagaacta 720

atgtagaccc aaatgcaa 738

<210> 396

<211> 2430

<212> DNA

<213> Homo sapiens

<400> 396

cacacccgca ctctctcccg gtttctgctc tccgcccggtg tggagtgggtg ggggcctggg 60

tgggaatggg cgtgtgccag cgcacgcgcg ctccctggaa ggagaagtct cagctagaac 120

gagcggccct aggttttcgg aaggaggat cagggatgtt tgcgagcggc tggaaaccaga 180

cgggtgccgat agaggaagcg ggctccatgg ctgccctcct gctgctgccc ctgctgctgt 240

tgctaccgct gctgctgctg aagctacacc tctggccgca gttgcgctgg cttccggcgg 300

acttggcctt tgcggtgcga gctctgtgct gcaaaagggc tcttcgagct cgcgccctgg 360

ccgcggctgc cgcgcacccg gaaggctccg aggggggctg cagcctggcc tggcgcctcg 420

cggaaactggc ccagcagcgc gccgcgcaca cttttctcat tcacggctcg cggcgcttta 480

gctactcaga ggcggagcgc gagagtaaca gggctgcacg cgccttccta cgtgcgctag 540

gctgggactg gggacccgac ggcggcgaca gcggcgaggg gagcgctgga gaaggcgagc 600

gggcagcgcc gggagccgga gatgcagcgg ccggaagcgg cgcggagtgt gccggagggg 660

acggtgccgc cagaggtgga ggagccgccg cccctctgtc acctggagca actgtggcgc 720

tgctcctccc cgctggccca gagtttctgt ggctctgggt cgggctggcc aaggccggcc 780

tgcgcaactgc ctttgtgccc accgccctgc gccggggccc cctgctgcac tgcctccgca 840

gctgcggcgc gcgcgcgctg gtgctggcgc cagagtttct ggagtccctg gagccggacc 900

tgcccgccct gagagccatg gggctccacc tgtgggctgc aggccagga acccacctg 960

ctggaattag cgatttgctg gctgaagtgt ccgctgaagt ggatgggcca gtgccaggat 1020

acctctcttc cccccagagc ataacagaca cgtgcctgta catcttcacc tctggcacca 1080

cgggcctccc caaggctgct cggatcagtc atctgaagat cctgcaatgc cagggttct 1140

atcagctgtg tgggtgtccac caggaagatg tgatctacct cgccctccca ctctaccaca 1200

tgtccgggtc cctgctgggc atcgtgggct gcatgggcat tggggccaca gtggtgctga 1260

aatccaagtt ctcggtggt cagttctggg aagattgccg gcagcacagg gtgacggtgt 1320

tccagtacat tggggagctg tgccgatacc ttgtcaacca gccccgagc aaggcagaac 1380

gtggccataa ggtccggctg gcagtgggca gcgggctgcg cccagatacc tgggagcggt 1440

ttgtgcggcg cttcgggccc ctgcaggtgc tggagacata tggactgaca gagggcaacg 1500  
 tggccaccat caactacaca ggacagcggg gcgctgtggg gcgtgcttcc tggctttaca 1560  
 agcatatctt ccccttctcc ttgattcgct atgatgtcac cacaggagag ccaattcggg 1620  
 acccccaggg gcactgtatg gccacatctc caggtgagcc agggctgctg gtggccccgg 1680  
 taagccagca gtccccattc ctgggctatg ctggcggggc agagctggcc caggggaagt 1740  
 tgctaaagga tgtcttccgg cctggggatg ttttcttcaa cactggggac ctgctggtct 1800  
 gogatgacca aggttttctc cgcttccatg atcgactagg agacaccttc aggtggaagg 1860  
 gggagaatgt ggccacaacc gaggtggcag aggtcttcga ggccctagat tttcttcagg 1920  
 aggtgaacgt ctatggagtc actgtgccag ggcataagg cagggctgga atggcagccc 1980  
 tagttctgcg tccccccac gctttggacc ttatgcagct ctacaccac gtgtctgaga 2040  
 acttgccacc ttatgcccg ccccgattcc tcaggctcca ggagtctttg gccaccacag 2100  
 agaccttcaa acagcagaaa gttcggatgg caaatgaggg cttcgacccc agcaccctgt 2160  
 ctgaccact gtacgttctg gaccaggctg taggtgccta cctgcccctc acaactgccc 2220  
 ggtacagcgc cctcctggca ggaaaccttc gaatctgaga acttcacac ctgaggcacc 2280  
 tgagagagga actctgtggg gtggggggccg ttgcaggtgt actgggctgt cagggatctt 2340  
 ttctatacca gaactgcggt cactattttg taataaatgt ggctggagct gatccagctg 2400  
 tctctgacct acaaaaaaaaa aaaaaaaaaa 2430

<210> 397  
 <211> 730  
 <212> PRT  
 <213> Homo sapiens

<400> 397

Met Gly Val Cys Gln Arg Thr Arg Ala Pro Trp Lys Glu Lys Ser Gln  
 1 5 10 15

Leu Glu Arg Ala Ala Leu Gly Phe Arg Lys Gly Gly Ser Gly Met Phe  
 20 25 30

Ala Ser Gly Trp Asn Gln Thr Val Pro Ile Glu Glu Ala Gly Ser Met  
 35 40 45

Ala Ala Leu Leu Leu Leu Pro Leu Leu Leu Leu Leu Pro Leu Leu Leu  
 50 55 60

Leu Lys Leu His Leu Trp Pro Gln Leu Arg Trp Leu Pro Ala Asp Leu  
 65 70 75 80

Ala Phe Ala Val Arg Ala Leu Cys Cys Lys Arg Ala Leu Arg Ala Arg  
 85 90 95

Ala Leu Ala Ala Ala Ala Asp Pro Glu Gly Pro Glu Gly Gly Cys  
 100 105 110

Ser Leu Ala Trp Arg Leu Ala Glu Leu Ala Gln Gln Arg Ala Ala His  
 115 120 125

Thr Phe Leu Ile His Gly Ser Arg Arg Phe Ser Tyr Ser Glu Ala Glu  
 130 135 140

Arg Glu Ser Asn Arg Ala Ala Arg Ala Phe Leu Arg Ala Leu Gly Trp  
 145 150 155 160

Asp Trp Gly Pro Asp Gly Gly Asp Ser Gly Glu Gly Ser Ala Gly Glu  
 165 170 175

Gly Glu Arg Ala Ala Pro Gly Ala Gly Asp Ala Ala Ala Gly Ser Gly  
 180 185 190

Ala Glu Phe Ala Gly Gly Asp Gly Ala Ala Arg Gly Gly Gly Ala Ala  
 195 200 205

Ala Pro Leu Ser Pro Gly Ala Thr Val Ala Leu Leu Leu Pro Ala Gly  
 210 215 220

Pro Glu Phe Leu Trp Leu Trp Phe Gly Leu Ala Lys Ala Gly Leu Arg  
 225 230 235 240

Thr Ala Phe Val Pro Thr Ala Leu Arg Arg Gly Pro Leu Leu His Cys  
 245 250 255

Leu Arg Ser Cys Gly Ala Arg Ala Leu Val Leu Ala Pro Glu Phe Leu  
 260 265 270

Glu Ser Leu Glu Pro Asp Leu Pro Ala Leu Arg Ala Met Gly Leu His  
 275 280 285



Leu Trp Ala Ala Gly Pro Gly Thr His Pro Ala Gly Ile Ser Asp Leu  
 290 295 300

Leu Ala Glu Val Ser Ala Glu Val Asp Gly Pro Val Pro Gly Tyr Leu  
 305 310 315 320

Ser Ser Pro Gln Ser Ile Thr Asp Thr Cys Leu Tyr Ile Phe Thr Ser  
 325 330 335

Gly Thr Thr Gly Leu Pro Lys Ala Ala Arg Ile Ser His Leu Lys Ile  
 340 345 350

Leu Gln Cys Gln Gly Phe Tyr Gln Leu Cys Gly Val His Gln Glu Asp  
 355 360 365

Val Ile Tyr Leu Ala Leu Pro Leu Tyr His Met Ser Gly Ser Leu Leu  
 370 375 380

Gly Ile Val Gly Cys Met Gly Ile Gly Ala Thr Val Val Leu Lys Ser  
 385 390 395 400

Lys Phe Ser Ala Gly Gln Phe Trp Glu Asp Cys Gln Gln His Arg Val  
 405 410 415

Thr Val Phe Gln Tyr Ile Gly Glu Leu Cys Arg Tyr Leu Val Asn Gln  
 420 425 430

Pro Pro Ser Lys Ala Glu Arg Gly His Lys Val Arg Leu Ala Val Gly  
 435 440 445

Ser Gly Leu Arg Pro Asp Thr Trp Glu Arg Phe Val Arg Arg Phe Gly  
 450 455 460

Pro Leu Gln Val Leu Glu Thr Tyr Gly Leu Thr Glu Gly Asn Val Ala  
 465 470 475 480

Thr Ile Asn Tyr Thr Gly Gln Arg Gly Ala Val Gly Arg Ala Ser Trp  
 485 490 495

Leu Tyr Lys His Ile Phe Pro Phe Ser Leu Ile Arg Tyr Asp Val Thr  
 500 505 510

Thr Gly Glu Pro Ile Arg Asp Pro Gln Gly His Cys Met Ala Thr Ser  
 515 520 525

Pro Gly Glu Pro Gly Leu Leu Val Ala Pro Val Ser Gln Gln Ser Pro  
 530 535 540

Phe Leu Gly Tyr Ala Gly Gly Pro Glu Leu Ala Gln Gly Lys Leu Leu  
 545 550 555 560

Lys Asp Val Phe Arg Pro Gly Asp Val Phe Phe Asn Thr Gly Asp Leu  
 565 570 575

Leu Val Cys Asp Asp Gln Gly Phe Leu Arg Phe His Asp Arg Thr Gly  
 580 585 590

Asp Thr Phe Arg Trp Lys Gly Glu Asn Val Ala Thr Thr Glu Val Ala  
 595 600 605

Glu Val Phe Glu Ala Leu Asp Phe Leu Gln Glu Val Asn Val Tyr Gly  
 610 615 620

Val Thr Val Pro Gly His Glu Gly Arg Ala Gly Met Ala Ala Leu Val  
 625 630 635 640

Leu Arg Pro Pro His Ala Leu Asp Leu Met Gln Leu Tyr Thr His Val  
 645 650 655

Ser Glu Asn Leu Pro Pro Tyr Ala Arg Pro Arg Phe Leu Arg Leu Gln  
 660 665 670

Glu Ser Leu Ala Thr Thr Glu Thr Phe Lys Gln Gln Lys Val Arg Met  
 675 680 685

Ala Asn Glu Gly Phe Asp Pro Ser Thr Leu Ser Asp Pro Leu Tyr Val  
 690 695 700

Leu Asp Gln Ala Val Gly Ala Tyr Leu Pro Leu Thr Thr Ala Arg Tyr  
 705 710 715 720

Ser Ala Leu Leu Ala Gly Asn Leu Arg Ile  
 725 730

<210> 398  
 <211> 3274  
 <212> DNA  
 <213> Homo sapiens

<400> 398  
 gtcacgctgc ccacgctctc ctctacgcgc cggaccctgg gatgctcttc ggccgcacatcc 60  
 cgctgcgcta cgccatactg atgcagatgc gcttcgatgg acgcctgggc ttccccggcg 120  
 gattcgtgga cacgcaggac agaagcctag aggacgggct gaaccgcgag ctgcgcgagg 180  
 aactggggcga agcggctgcc gctttccgcg tggagcgcac tgactaccgc agctcccacg 240  
 tcgggtcagg gccacgcgtt gtggcccaact tctatgccaa gcgtctgacg ctcgaggagc 300  
 tggttgctgt ggaggccggc gcaacacgcg ccaaggacca cgggctggag gtgctggggc 360  
 tgggtgcgagt gcccctgtat accctgcggg atgggtgtagg aggcctgcct accttcctgg 420  
 agaattcctt tattggctct gcgcgggagc agttacttga agctctccag gacttgggac 480  
 tgctgcagtc tggctctatt tcaggcctta agattccagc tcatcactag aggcagccct 540  
 ccatggaccc atgaaaactg agatgaggac cttggtacta gggagggagg gaaggacgtg 600  
 ggaatgtttt cttattggat ctgagagatg atacatgata ccagatgaaa agaaggagaa 660  
 gtgtgtacca tatgttttga gcagaggacc ctccaactta tggcatcagg ggcaaaaagt 720  
 cacagcttat cccaggcacc ctggcagggt ctcagagcct gcctcctccc tgtttatatg 780  
 cgtacagcct ggtaaccccc aggcacgcaa atatacaatc tgtaacaaca cacagcctga 840  
 caccttcccc tggatcatgtc cagttaacc ttgaagtggc atttgtcaca ctaccctggg 900  
 ccctgattgc aaggagcttc tgaagcaagg gtgaatcctt cccacactcc tccatggttg 960  
 ccctccaagg tctagcccag cctatttggt agggaggata gagaaacaga gcacccctg 1020  
 tgctttctga aaatagactt gctcttgtct tgagtgggtga ccaaagcagt tggctcttaa 1080  
 aagggtgggag agcagcccaa ccaatcccca atccttttct tctgaaactg agcaggaagg 1140  
 gtaaggaagt ggctaggtct ccttggaactg agcatggaca tgagtcctgt gaggactggt 1200  
 gtctctcttc tagagctttc atctttggga tgcctgagac tccgagacta tcagaaggga 1260  
 attgacccac ccagctctag caccaccctg ccttcacttc atctacataa aggtggtata 1320  
 aaaacataga ctggaggagg taatccatgg agagagaaaa agaagagggc tcaggacaag 1380  
 gccctgagga ggccaatcc taaaagtttg ggcagaggga accaggcacg ttaaagaaga 1440  
 cagaaagcgg actatgcaga gtgcttgtga gggtttcact aaaacagagg caaaactgtc 1500

cattgaattc agtaacatga agtgtttgat gactatgatg gcagcagttt caggaagggc	1560
ggatatggaag gcaggctgta ctggttgagt gaatggaaag ttggggagta gaacgtgtga	1620
gaagttggcc ttcaaggggc tcaggttaat aatagagagc tatggagtca aggcattgtt	1680
aagatgggag gtagagcacg ccaatatga tggcaacagt caagatggtg tgatgagaga	1740
gatgggaggg gcacaaagag gaggaccct gaaggagcag agtccatgag aaagaaggag	1800
ggatgggacc tttgtaggaa gagacacagt cctgcagcct catatggctc aataaaacag	1860
aaaggggcaa gtatagaaga ttaggatgtc taaattaatg gggaaatgat gaaggagttt	1920
gaatctcttc tttgtgaaat gaagtgagac tatcagctag ttgtgggtgg agtgtgttct	1980
cagaaggat gaagtagatg ttttcctagg tgttgaaaa caggttgatt aaggcaacag	2040
cagaagggca gggcaaggct gagctctgag atggtcagtt tagagtagga tgctgggcac	2100
tcaggtgtgt gtgtgttgag tggggctctg cacacacctg tcttccctc atcaggattc	2160
aggagctggg atgggtacac ttactgcagt gttggggttt tgccaggga gtaaaaggag	2220
ctgagagaaa gatgggtcag ttcagaagac atacacagga gaaattgtag tgatgaaatg	2280
tgcagtctaa ggtttaatct gaccaagaaa ttggaattga aaacaggagg tgactagga	2340
gggattagga aattagaggt cttgacaaga tagaaactcc agcatggtga ggggttgggc	2400
agggaggtat atttgagcca gacaggagtg ctttggaat tgagaggtgg agcaatctca	2460
ggtaaaggca aaatagaggg tatgacctgg ggttgctggc cagagccagg gaggagcctt	2520
aagaagtga atctagggtt ggcgaggctg gagggcaggg tgagcctcca catgggtgct	2580
gaagcaagaa accgacagat gttgaggaga atggtgtgac ctaggagtca gcatccttgg	2640
tgaacaagag gagtggccac aaggccagtg gcacctgcca gaggggaaag caggcatgac	2700
aggatagcat ctcccagggt agagcctttt gaggaaggga ggtgggcag tggcttgga	2760
gcttgatgca gagcagtgtg ggtccactg gcagccctt gtcttagaag aatgggagta	2820
cccagtggg gagcagctgt acaatgaggt agactcctag aggttaatta tcatctccta	2880
atcttaccct gaccctttt tcaaacgtta tctagattaa acctcagtat aggcaggctg	2940
caggaaatg acattccagt ggcccctggg gttccagcct gtagcagctt catctgtgct	3000
ttgtgcactt gttctcagt catctctgca agggaccctg acgcctggga gatcagagcc	3060
actgaccctt tatggcactg ctaacagacc cttccctca ggtaattctg gatccagaac	3120
tcattatggg atgtaatcca ggtcaacact aataccactt ggaaggttcc gctctgtctc	3180

actctgcttg agtatccac tgatcagtct ctacagcgct gcctactggg cagctcatct 3240  
gtccacttat tcgtattaaa ttgcttttt attt 3274

<210> 399  
<211> 162  
<212> PRT  
<213> Homo sapiens

<400> 399

Met Leu Phe Gly Arg Ile Pro Leu Arg Tyr Ala Ile Leu Met Gln Met  
1 5 10 15

Arg Phe Asp Gly Arg Leu Gly Phe Pro Gly Gly Phe Val Asp Thr Gln  
20 25 30

Asp Arg Ser Leu Glu Asp Gly Leu Asn Arg Glu Leu Arg Glu Glu Leu  
35 40 45

Gly Glu Ala Ala Ala Ala Phe Arg Val Glu Arg Thr Asp Tyr Arg Ser  
50 55 60

Ser His Val Gly Ser Gly Pro Arg Val Val Ala His Phe Tyr Ala Lys  
65 70 75 80

Arg Leu Thr Leu Glu Glu Leu Leu Ala Val Glu Ala Gly Ala Thr Arg  
85 90 95

Ala Lys Asp His Gly Leu Glu Val Leu Gly Leu Val Arg Val Pro Leu  
100 105 110

Tyr Thr Leu Arg Asp Gly Val Gly Gly Leu Pro Thr Phe Leu Glu Asn  
115 120 125

Ser Phe Ile Gly Ser Ala Arg Glu Gln Leu Leu Glu Ala Leu Gln Asp  
130 135 140

Leu Gly Leu Leu Gln Ser Gly Ser Ile Ser Gly Leu Lys Ile Pro Ala  
145 150 155 160

His His

<210> 400  
 <211> 2480  
 <212> DNA  
 <213> Homo sapiens

<400> 400  
 ggcacgaggg gaagccctgg ggcgctgccg ccgctttcct taaccacaaa tcaggccgga 60  
 caggagaggg aggggtgggg gacagtgggt gggcatttag actgccagca ctttgcctatc 120  
 tacagccggg gctcccgagc ggcagaaagt tccggccact ctctgccgct tgggttgggc 180  
 gaagccagga ccgtgccgcg ccaccgccag gatatggagc tactgtcgcc accgctccgc 240  
 gacgtagacc tgacggcccc cgacggctct ctctgctcct ttgccacaac ggacgacttc 300  
 tatgacgacc cgtgtttcga ctccccggac ctgcgcttct tcgaagacct ggacccgcgc 360  
 ctgatgcacg tgggcgcgct cctgaaacc gaagagcact cgcacttccc cgcggcggtg 420  
 cacccgggcc cgggcgcacg tgaggacgag catgtgcgcg cgcccagcgg gcaccaccag 480  
 gcgggcccgt gcctactgtg ggcctgcaag gcgtgcaagc gcaagaccac caacgcccag 540  
 cgccgcaagg ccgccaccat gcgcgagcgg cgccgcctga gcaaagtaaa tgaggccttt 600  
 gagacactca agcgctgcac gtcgagcaat ccaaaccagc ggttgcccaa ggtggagatc 660  
 ctgcgcaacg ccatccgcta tatcgagggc ctgcaggctc tgctgcgcga ccaggacgcc 720  
 gcgccccctg gcgcgcgagc cgccttctat gcgcggggcc cgctgcccc gggccgcggc 780  
 ggcgagcact acagcggcga ctccgacgcg tccagcccgc gctccaactg ctccgacggc 840  
 atgatggact acagcggccc ccgagcggc gcccgggcgg ggaactgcta cgaaggcgcc 900  
 tactacaacg aggcgcccag cgaacccagg ccgggaaga gtgcggcggt gtcgagccta 960  
 gactgcctgt ccagcatcgt ggagcgcac tccaccgaga gccctgcggc gcccgccctc 1020  
 ctgctggcgg acgtgccttc tgagtcgcct ccgcgcaggc aagaggctgc cggccccagc 1080  
 gaggagagaga gcagcggcga cccacccag tcaccggacg ccgccccgca gtgccttgcg 1140  
 ggtgcgaacc ccaaccgat ataccagggt ctctgagggg atggtggccg cccaccgcc 1200  
 cgagggatgg tgcccctagg gtccctcgcg cccaaaagat tgaacttaaa tgccccctc 1260  
 ccaacagcgc tttaaaagcg acctctcttg aggtaggaga ggcgggagaa ctgaagtctc 1320  
 cgcccccgcc ccacagggca aggacacagc gcggtttttt ccacgcagca cccttctcgg 1380  
 agaccattg cgatggccgc tccgtgttcc tcggtgggccc agagctgaac cttgaggggc 1440  
 taggttcagc tttctcgcgc cctcccccat gggggtgaga ccctgcgaga cctaagccct 1500

```

gccccgggat gcaccggtta tttggggggg cgtgagaccc agtgcactcc ggtcccaaatt 1560
gtagcagggtg taaccgtaac ccacccccaa cccgtttccc ggttcaggac cactttttgt 1620
aatacttttg taatctattc ctgtaaataa gagttgcttt gccagagcag gagcccctgg 1680
ggctgtatatt atctctgagg catggtgtgt ggtgctacag ggaatttgta cgtttatacc 1740
gcaggcgggc gagccgcggg cgctcgctca ggtgatcaaa ataaaggcgc taatttatac 1800
cgcaaaaaaa aaaaaaaaaa aaactcgagg ccattttctc ttaaacaaaa caaaactttc 1860
. taagtacagt cattctctag gatttgggaa gctccttgca cttggaacag ggctcagggtg 1920
ggtggagcag taaggcacta cccagagagc ttgctgctgc ggccctgtcc tgcggcctca 1980
aagttcttct ttactatata taacgtgcgg tcataccttt cttcgttggtg gtggggatgg 2040
aagagcagag ggagcatggc ccaggggtgt tgaggccagc ggtgagagcc gtgtagcca 2100
agacatggaa ctgtgttctc aagggttatg tggggcgtgg gctctccata gtgtgtatga 2160
aaagcttggt gactctagcg gctcagagag gactttgctg ggtttctttc tgtgaatatac 2220
tccgtgctga ccatgctgga attggatgat tctgcaattc gggacctact gcaggggtcc 2280
gttttagtaac gtcttgctg tgatctttgt tcttgacctc tagaccccaa gatgtgaaca 2340
gtgcacgtgt taatgtcatc tttgctcatg tgttataagc cccaagttgc tgtatatattt 2400
cacaagtatg tctacacact ggtcatgatt ttgataataa ataacgataa atcgaaaaaa 2460
aaaaaaaaaa aaaaaaaaaa                                     2480

```

<210> 401  
 <211> 320  
 <212> PRT  
 <213> Homo sapiens

<400> 401

Met Glu Leu Leu Ser Pro Pro Leu Arg Asp Val Asp Leu Thr Ala Pro  
 1 5 10 15

Asp Gly Ser Leu Cys Ser Phe Ala Thr Thr Asp Asp Phe Tyr Asp Asp  
 20 25 30

Pro Cys Phe Asp Ser Pro Asp Leu Arg Phe Phe Glu Asp Leu Asp Pro  
 35 40 45

Arg Leu Met His Val Gly Ala Leu Leu Lys Pro Glu Glu His Ser His  
 50 55 60

Phe Pro Ala Ala Val His Pro Ala Pro Gly Ala Arg Glu Asp Glu His  
 65 70 75 80  
 Val Arg Ala Pro Ser Gly His His Gln Ala Gly Arg Cys Leu Leu Trp  
 85 90 95  
 Ala Cys Lys Ala Cys Lys Arg Lys Thr Thr Asn Ala Asp Arg Arg Lys  
 100 105 110  
 Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Ser Lys Val Asn Glu Ala  
 115 120 125  
 Phe Glu Thr Leu Lys Arg Cys Thr Ser Ser Asn Pro Asn Gln Arg Leu  
 130 135 140  
 Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu Gly Leu  
 145 150 155 160  
 Gln Ala Leu Leu Arg Asp Gln Asp Ala Ala Pro Pro Gly Ala Ala Ala  
 165 170 175  
 Ala Phe Tyr Ala Pro Gly Pro Leu Pro Pro Gly Arg Gly Gly Glu His  
 180 185 190  
 Tyr Ser Gly Asp Ser Asp Ala Ser Ser Pro Arg Ser Asn Cys Ser Asp  
 195 200 205  
 Gly Met Met Asp Tyr Ser Gly Pro Pro Ser Gly Ala Arg Arg Arg Asn  
 210 215 220  
 Cys Tyr Glu Gly Ala Tyr Tyr Asn Glu Ala Pro Ser Glu Pro Arg Pro  
 225 230 235 240  
 Gly Lys Ser Ala Ala Val Ser Ser Leu Asp Cys Leu Ser Ser Ile Val  
 245 250 255  
 Glu Arg Ile Ser Thr Glu Ser Pro Ala Ala Pro Ala Leu Leu Leu Ala  
 260 265 270  
 Asp Val Pro Ser Glu Ser Pro Pro Arg Arg Gln Glu Ala Ala Ala Pro  
 275 280 285



Ser Glu Gly Glu Ser Ser Gly Asp Pro Thr Gln Ser Pro Asp Ala Ala  
 290 295 300

Pro Gln Cys Pro Ala Gly Ala Asn Pro Asn Pro Ile Tyr Gln Val Leu  
 305 310 315 320

<210> 402  
 <211> 2290  
 <212> DNA  
 <213> Homo sapiens

<400> 402  
 gaattccctc ttaactcttg aagtaaataa ataatctttg ctggcaggac tatgctgaat 60  
 ctccttaggc actctctaata tagatgtcct aggtcctccc aattcttagt ccttttatac 120  
 ctgtttttct ccttctctta ttccatttag tttttcaatt catacaaaac tgtatccagg 180  
 ccatcaccta tcattctata caacaaatgt ttcttctaac atccccacaa tatcacccct 240  
 taccacaaga cctcccttca gcttaatctc tccactctc ggttcccacg ctgcccctaa 300  
 tcccgcttga agcagccctg agaaacatcg cccattctct ctccatacca cccccaaaa 360  
 attttcgcca cccaacact tcaacactat tttatttttc ttattaatat aagaaggcag 420  
 gcatgtcagg cctctgagcc caagccaagc catcgcaacc cctgtgactt gcacctatac 480  
 gccagatgg cctgaagtaa ctgaagaatc acaaaagaag tgaatatgcc ttgccccacc 540  
 ttaactgatg acattccacc acaaaagaag tgtaaattggc cggtccttgc cttaactgat 600  
 gacattacct tgtgaaagtc ctcttcctgg ctcatcctgg ctcaaaaagc acccccactg 660  
 agcaccttga gacccccact cctgcccgcc agagaacaaa cccccttga ctgtaatttt 720  
 cctttaccta cccaaatcct ataaaacggc cccaccctta tctcccttca ctgactctct 780  
 tttcggactc agcccgcctg caccaggtg aaataaacag ctttattgct cacacaaagc 840  
 ctgttttggtg gtctcttcac acggacgcac atgaaattta gttgtatcca taaggcatat 900  
 ggaggagact aattcctctt ccaaagacat gtaccagagt cctggagagg ctgagggctg 960  
 gaggtggaag aaaggctctg acaggggtca gaatctgttc aggaacata gcaaatgcct 1020  
 gatactttta attagagaaa ggtttgaatc tccacattca tatatttgca gtccagtgcac 1080  
 ctttcagttt ttttatgccc aaagtgtcaa gcatgttaat gttaccattg actgcctccc 1140  
 tgaagggtgca gctaccaggg gaactgccag gacttcaaag cccacaacca aaagccagaa 1200  
 aacactacca agtacaagcc ccggacactg gaccagagc acaccctggg catctgctct 1260

gagatcctct ccttggacag agacagctgc tccttcagaa acagaggaga ccctgaacac 1320  
 aggcaggcct cctgagcttc cagccagggc cacagccaca tggttcagtg cctcccacac 1380  
 tctcccagcc ttggctacca ggaggggtggc cagaactcag tggttgacag ctgacagaca 1440  
 gacgtgggct tccatatcgt ccgtgccctg ggctcagacc atcagtgaga aaaaacctgg 1500  
 agggctctctc tgggaaactc gttcttcccc accgactact gcagggaccg aggaagccat 1560  
 gaacactaca agccttttgg cgcttctgc tgagataatg gccacacctg gcagcccatc 1620  
 ccaggccagc cctacctcgg gagcattcac ccatggcaca cagactccga gtccaaccaa 1680  
 ggcaacagcc ccagatatc cacaacagg tgatctctct gcagagtggc cattcactgc 1740  
 tgggtgaagag ccagtccctg tcccaagacc ccatcaagtt tcaaggtgtc ctgagccact 1800  
 cttcaagggtg ggagctatgg cagctgctcc tctcaccttg gctattcaga ggctcaaccc 1860  
 atgcctgatg gagctgtgcc aattcttcca gcaatgcctc tgcattgagc agaggagtcc 1920  
 caggacagag gacatgagat actgtcttga atactattcc tggtttctga agaattgcaac 1980  
 atatatctgt cagaggggtga aaaggggtgc ccactcgcac accttaaagc aaaagtcct 2040  
 tgagaatatc tgcaagtctg tgtgaggcct tgaaaataac actagggcac aacaattact 2100  
 tcaggggata cgccatccac cctggctctt gtcccaagtg ggctacattt gaagaattca 2160  
 cccaggctcc agctagatca tcagttaatt taaagtgggt attcttggaa gtagcatttt 2220  
 ttttccctct cctgtgaatc tgtgcaaaac attgaaggta gaagttttct tgttaaaaaa 2280  
 aaaggaattc 2290

<210> 403  
 <211> 388  
 <212> PRT  
 <213> Homo sapiens

<400> 403

Met Glu Glu Thr Asn Ser Ser Ser Lys Asp Met Tyr Gln Ser Pro Gly  
 1 5 10 15

Glu Ala Glu Gly Trp Arg Trp Lys Lys Gly Ser Asp Arg Gly Gln Asn  
 20 25 30

Leu Phe Arg Lys His Ser Lys Cys Leu Ile Leu Leu Ile Arg Glu Arg  
 35 40 45

Phe Glu Ser Pro His Ser Tyr Ile Cys Ser Pro Val Thr Phe Gln Phe  
 50 55 60

Phe Tyr Ala Gln Ser Val Lys His Val Asn Val Thr Ile Asp Cys Leu  
 65 70 75 80

Pro Glu Gly Ala Ala Thr Arg Gly Thr Ala Arg Thr Ser Lys Pro Thr  
 85 90 95

Thr Lys Ser Gln Lys Thr Leu Pro Ser Thr Ser Pro Gly His Trp Thr  
 100 105 110

Gln Ser Thr Pro Trp Ala Ser Ala Leu Arg Ser Ser Pro Trp Thr Glu  
 115 120 125

Thr Ala Ala Pro Ser Glu Thr Glu Glu Thr Leu Asn Thr Gly Arg Pro  
 130 135 140

Pro Glu Leu Pro Ala Arg Ala Thr Ala Thr Trp Phe Ser Ala Ser His  
 145 150 155 160

Thr Leu Pro Ala Leu Ala Thr Arg Arg Val Ala Arg Thr Gln Trp Leu  
 165 170 175

Thr Ala Asp Arg Gln Thr Trp Ala Ser Ile Ser Ser Val Pro Trp Ala  
 180 185 190

Gln Thr Ile Ser Glu Lys Lys Pro Gly Gly Ser Leu Trp Glu Thr Arg  
 195 200 205

Ser Ser Pro Pro Thr Thr Ala Gly Thr Glu Glu Ala Met Asn Thr Thr  
 210 215 220

Ser Leu Leu Ala Pro Ala Ala Glu Ile Met Ala Thr Pro Gly Ser Pro  
 225 230 235 240

Ser Gln Ala Ser Pro Thr Ser Gly Ala Phe Thr His Gly Thr Gln Thr  
 245 250 255

Pro Ser Pro Thr Lys Ala Thr Ala Pro Arg Tyr Pro Gln Thr Gly Asp  
 260 265 270

Leu Ser Ala Glu Trp Pro Phe Thr Ala Gly Glu Glu Pro Val Leu Val  
 275 280 285

Pro Arg Pro His Gln Val Ser Arg Cys Pro Gln Pro Leu Phe Lys Val  
 290 295 300

Gly Ala Met Ala Ala Ala Pro Leu Thr Leu Ala Ile Gln Arg Leu Asn  
 305 310 315 320

Pro Cys Leu Met Glu Leu Cys Gln Phe Phe Gln Gln Cys Leu Cys Met  
 325 330 335

Ser Gln Arg Ser Pro Arg Thr Glu Asp Met Arg Tyr Cys Leu Glu Tyr  
 340 345 350

Tyr Ser Trp Phe Leu Lys Asn Ala Thr Tyr Ile Cys Gln Arg Val Lys  
 355 360 365

Arg Val Ser His Ser His Thr Leu Lys Gln Lys Cys Leu Glu Asn Ile  
 370 375 380

Cys Lys Ser Val  
 385

<210> 404  
 <211> 546  
 <212> DNA  
 <213> Homo sapiens

<400> 404  
 cttgttgcca cggtggaagt gaatggtggc atcttgggtt acttgaaacc tccatatctt 60  
 gggttaaggc agttttctta ctaagcctct gtggagctgg gactgcaggg acaaacagcc 120  
 atgcccagtt aatTTTTTgt attttaatag agacagagtt tcaccatggt gcccaagatg 180  
 gtcttgaact cctgagctca gtcaatccac ctgcattagc cttccaaagt gctaggattg 240  
 caggcgtgag ccaccgtgcc cagccagaat gtgttctctt aagtacagtc acggagtgtg 300  
 atatgtaggg tgtgcaaggc agcatgcagt gaggtggtgg tggtgctaga attgaggaaa 360  
 gacaggtcac atttcattat gaaatgtgtc atcacttttt gattaagatt agggatttaa 420  
 tcctacagaa aatgcagcat ccctggtgat agcagaagag ctgttacttt tagtgacatt 480  
 tgaaaaaccc tacagaggag gaaagaacag gtgttaagtg ttgaaatatg ttaaggaaga 540

caacct

546

<210> 405  
 <211> 21  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 405

Met Cys His His Phe Leu Ile Lys Ile Arg Asp Leu Ile Leu Gln Lys  
 1 5 10 15

Met Gln His Pro Trp  
 20

<210> 406  
 <211> 546  
 <212> DNA  
 <213> Homo sapiens

&lt;400&gt; 406

cttgttgcca cgggtggaagt gaatggtggc atcttgggtt acttgaaacc tccatatctt 60  
 ggggttaaggc agttttctta ctaagcctct gtggagctgg gactgcaggg acaaacagcc 120  
 atgcccagtt aattttttgt attttaatag agacagagtt tcacatggtt gcccaagatg 180  
 gtcttgaact cctgagctca gtcaatccac ctgcattagc cttccaaagt gctaggattg 240  
 caggcgtgag ccaccgtgcc cagccagaat gtgttctctt aagtacagtc acggagtgtg 300  
 atatgtaggg tgtgcaaggc agcatgcagt gaggtggtgg tgggtgctaga attgaggaaa 360  
 gacaggtcac atttcattat gaaatgtgtc atcacttttt gattaagatt agggatttaa 420  
 tcctacagaa aatgcagcat ccctggtgat agcagaagag ctgttacttt tagtgacatt 480  
 tgaaaaaccc tacagaggag gaaagaacag gtgttaagtg ttgaaatatg ttaaggaaga 540  
 caacct 546

<210> 407  
 <211> 21  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 407

Met Cys His His Phe Leu Ile Lys Ile Arg Asp Leu Ile Leu Gln Lys  
 1 5 10 15

Met Gln His Pro Trp  
20

<210> 408  
<211> 1977  
<212> DNA  
<213> Homo sapiens

<400> 408  
aaaacctgtg ggtgcctcag accacagcag agctcacaga acctgcggga gccaggctga 60  
cccgccagca tggtagagtt cgcgcccttg tttatgccgt gggagcgcag gctgcagaca 120  
cttgctgtcc tacagtttgt cttctccttc ttggcactgg ccgagatctg cactgtgggc 180  
ttcatagccc tcctgtttac aagattctgg ctctcactg tcctgtatgc ggcttggtgg 240  
tatctggacc gagacaagcc acggcagggg ggccggcaca tccaggccat caggtgctgg 300  
actatatgga agtacatgaa ggactatttc cccatctcgc tggtaagac tgctgagctg 360  
gacccctctc ggaactacat tgccggcctc ccccccatg gagtcctggc agtcggagcc 420  
tttgccaacc tgtgcactga gagcacaggc ttctcttcga tcttccccgg tatccgcccc 480  
catctgatga tgccgacctt gtggttccgg gcccccttct tcagagatta catcatgtct 540  
gcagggttgg tcacatcaga aaaggagagt gctgctcaca ttctgaacag gaagggtggc 600  
ggaaacttgc tgggcatcat tgtagggggg gcccaggagg ccctggatgc caggcctgga 660  
tccttcacgc tgttactgcg gaaccgaaag ggcttcgtca ggctcgccct gacacacggg 720  
tatcaagcct ctgggaagag cactctgggt tcagttggca attggcaagg attttatttt 780  
ggtgggaaga tggcagagac gaatgcagat tctatttttg tagagatttt cagtccattc 840  
acaattaaga ttatatattg gtgtcttatg cccaaatacc tagaaaagt tccacaacgg 900  
agactcagt atctaagaaa ctaggtggca atgaacatat tccacaaagc tggcatttga 960  
tctgagatct gtggtatcta gaagagtgat atttggggta catttcagag ctgttctccc 1020  
tccttggggg gaggcaccc tggagaaacat gagccagctg aggtgggaga tatttttcta 1080  
ggaaaaacaa tgcagatttt tatatctggg aggactctct gaagcattct ggtctacctc 1140  
tcatggtgca actgggaagt tgtggccctg caaggaccc gcccaaggtc agagaatggg 1200  
gctgtgaagg tctgggagat aaccaggcc tccacctcca gcccagggtg ctgacctctg 1260  
ctccatttct tggctactga gtccctgcag gaagctaaag ggcctttcag ctctgtgcctt 1320  
ctctgggggc tccacatgc cctctttcct ctatttgtct ccagggcacc cctggtgcca 1380

```

atcttctcct tcggggagaa tgacctatctt gaccagattc ccaactcttc tggctcctgg 1440
ttacgctata tccagaatcg gttgcagaag atcatgggca tctccctccc actctttcat 1500
ggccgtgggtg tcttccagta cagctttggt ttaataccct accgccggcc catcaccact 1560
gtgggtaagt ccaggaccag gctgggaggg aggaggccaa agggacaggg caggttgtgt 1620
gctgcaaggg gacatggaga tgagccagat ttattcctgc cctaattggg ctcacattct 1680
agactgggaa acatacacat acaagcagat agaatagaag acagtctggg ataggaacta 1740
tagcagaggt gccaacagca atagttgtga ctaattgctg agcacctgct gtgtgccagg 1800
cactacacta gctgccctac atgaagcaac tcagcttata ctaacaatct tcatggcagg 1860
atcttttttt aagagttttg ctcttgctgc tcagcctgga gtgcagtga gtgagattgc 1920
gccactgcac tccagcctgg gctacagagc gagactctac ctcaaaaaaa aaaaaaa 1977

```

```

<210> 409
<211> 284
<212> PRT
<213> Homo sapiens

```

```

<400> 409

```

```

Met Val Glu Phe Ala Pro Leu Phe Met Pro Trp Glu Arg Arg Leu Gln
1           5           10           15

```

```

Thr Leu Ala Val Leu Gln Phe Val Phe Ser Phe Leu Ala Leu Ala Glu
20           25           30

```

```

Ile Cys Thr Val Gly Phe Ile Ala Leu Leu Phe Thr Arg Phe Trp Leu
35           40           45

```

```

Leu Thr Val Leu Tyr Ala Ala Trp Trp Tyr Leu Asp Arg Asp Lys Pro
50           55           60

```

```

Arg Gln Gly Gly Arg His Ile Gln Ala Ile Arg Cys Trp Thr Ile Trp
65           70           75           80

```

```

Lys Tyr Met Lys Asp Tyr Phe Pro Ile Ser Leu Val Lys Thr Ala Glu
85           90           95

```

```

Leu Asp Pro Ser Arg Asn Tyr Ile Ala Gly Phe His Pro His Gly Val
100          105          110

```

Leu Ala Val Gly Ala Phe Ala Asn Leu Cys Thr Glu Ser Thr Gly Phe  
 115 120 125  
 Ser Ser Ile Phe Pro Gly Ile Arg Pro His Leu Met Met Pro Thr Leu  
 130 135 140  
 Trp Phe Arg Ala Pro Phe Phe Arg Asp Tyr Ile Met Ser Ala Gly Leu  
 145 150 155 160  
 Val Thr Ser Glu Lys Glu Ser Ala Ala His Ile Leu Asn Arg Lys Gly  
 165 170 175  
 Gly Gly Asn Leu Leu Gly Ile Ile Val Gly Gly Ala Gln Glu Ala Leu  
 180 185 190  
 Asp Ala Arg Pro Gly Ser Phe Thr Leu Leu Leu Arg Asn Arg Lys Gly  
 195 200 205  
 Phe Val Arg Leu Ala Leu Thr His Gly Tyr Gln Ala Ser Gly Lys Ser  
 210 215 220  
 Thr Leu Gly Ser Val Gly Asn Trp Gln Gly Phe Tyr Phe Gly Gly Lys  
 225 230 235 240  
 Met Ala Glu Thr Asn Ala Asp Ser Ile Leu Val Glu Ile Phe Ser Pro  
 245 250 255  
 Phe Thr Ile Lys Ile Ile Phe Trp Cys Leu Met Pro Lys Tyr Leu Glu  
 260 265 270  
 Lys Phe Pro Gln Arg Arg Leu Ser Asp Leu Arg Asn  
 275 280

<210> 410  
 <211> 1549  
 <212> DNA  
 <213> Homo sapiens

<400> 410  
 gtgccctgtg agaccgcaa gatggtggtg ggcgcgttcc ctatggcgaa gctgctatac 60  
 ttgggcatcc ggcaggtcag caagccgctt gccaacgta ttaaggaggc cgcccgccga 120  
 agcgagttct tcaagaccta tatctgcctc ccgccggctc aactgtatca ctgggtggag 180



```

atgcggacca agatgcgcat catgggcttc cggggcacgg tcatcaagcc gctgaacgag      240
gaggcggcag ccgagctggg cgcagagctg ctgggcgaag ccaccatctt catcgtgggc      300
ggcggctgcc tagtgctgga gtactggcgc caccaggcgc agcagcgcca caaggaggag      360
gagcagcgtg ctgcctggaa cgcgctgcgg gacgaggtgg gccacctggc gctggcgctg      420
gaagcgctgc aggcgcaggt gcaggcggcg ccgccacagg gcgccctgga ggaactgcgc      480
acagagctgc aagaggtgcg cgcacagctc tgcaatcccg gccggtcgcg tccccacgca      540
gtgcctgcgt ccaagaaata ggagcttgct ggatggaacc tgaatttgga catggcctat      600
gtacctaacg tggccttctt cccgcaccac ccttgacctg gctggcccag tggaaaccac      660
caggatcttg atgcaacttg gcatttggtt acccctgctg ataagagcag ccattacctg      720
ccactgggac cagcaggtga agcgttgcaa catagccccc tccatcatcc ttcacctcct      780
atccccact ccaaaccagg acgacctgca aggtccagc cagcaggaca ccgtgggcac      840
tctggcaaata gaaaaaatgg aacctggtct tgagctgaat caatgtgtta ttgttaccac      900
caccocgggt ttacctgatc agtgtaacc tttactggga cactcatctg ttacactgga      960
acaccttctt ctttttgtca atcggcacag accactgtaa ggaaatgcag tgtgttgag      1020
tggccttttc tccccctcac cttctaaggt cagctctagc tgagcatcag tgctctctta      1080
aggaggaaaa aaacgggtgcg gctgggagcg gtggctcagc cctgtaatcc tagcaccttg      1140
ggaggccgag gcgggcggat cacttgaggt caggagtcc agaccagcct ggccaacaag      1200
gtgaaactcc gtctctacta aaaatacaaa aattagccgg gtgtggtggg gtgcgcttgt      1260
aatcccagct actcgggagg ctgaggcagg agaattgctt gaacccatga ggtggagggt      1320
gcggtgagcc aagatggcac cattgcaccc tagcctgggc aacagagcaa gacaccgtct      1380
taaaacaaaa agttaaccgg gcgtggtggt ggggtgcctgt aatcctagct acttgggagg      1440
ctgaggcagg agaattgctt gaacttggga ggtggaggcc aagattgtac cactgtattc      1500
cagcccgggg gacagagcaa gactgtgtct caaaaaaaaa aaaaaaaaaa      1549

```

```

<210> 411
<211> 179
<212> PRT
<213> Homo sapiens

```

```

<400> 411

```

```

Met Val Val Gly Ala Phe Pro Met Ala Lys Leu Leu Tyr Leu Gly Ile
1          5          10          15

```

Arg Gln Val Ser Lys Pro Leu Ala Asn Arg Ile Lys Glu Ala Ala Arg  
                   20                  25                  30  
 Arg Ser Glu Phe Phe Lys Thr Tyr Ile Cys Leu Pro Pro Ala Gln Leu  
                   35                  40                  45  
 Tyr His Trp Val Glu Met Arg Thr Lys Met Arg Ile Met Gly Phe Arg  
                   50                  55                  60  
 Gly Thr Val Ile Lys Pro Leu Asn Glu Glu Ala Ala Ala Glu Leu Gly  
                   65                  70                  75                  80  
 Ala Glu Leu Leu Gly Glu Ala Thr Ile Phe Ile Val Gly Gly Gly Cys  
                   85                  90                  95  
 Leu Val Leu Glu Tyr Trp Arg His Gln Ala Gln Gln Arg His Lys Glu  
                   100                  105                  110  
 Glu Glu Gln Arg Ala Ala Trp Asn Ala Leu Arg Asp Glu Val Gly His  
                   115                  120                  125  
 Leu Ala Leu Ala Leu Glu Ala Leu Gln Ala Gln Val Gln Ala Ala Pro  
                   130                  135                  140  
 Pro Gln Gly Ala Leu Glu Glu Leu Arg Thr Glu Leu Gln Glu Val Arg  
                   145                  150                  155                  160  
 Ala Gln Leu Cys Asn Pro Gly Arg Ser Ala Ser His Ala Val Pro Ala  
                   165                  170                  175  
 Ser Lys Lys

<210> 412  
 <211> 626  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (29)..(29)  
 <223> n = unknown

```

<400> 412
tcgccctgtc gccaggtctg gagtgcagng gcgcaatctc ggctcactgc aagctccgcc      60
tcccgggttc acgccattct cctgcctcag cctcccaagt agctgggact acaggcgccc      120
gccactacgc ccggctaatt ttttgtattt ttttagtaga gacgggggtt caccgtttta      180
gccgggatgg tctcgatctc ctgacctcgt gatccacccg cctcggcctc ccaaaatgct      240
gggattacag gcgtgagcca ccgcgcccgg cctcttacat gtttttttta agctttaaaa      300
aaaaaaatac atttgaaaat attttaaaaa gcttatagaa tgacataaag aaaataatttt      360
tgtacagctg tacaatgtgt gttttaagct aagtgttatt acaagagtta aaaacttaaa      420
aaacatttaa aaagttaaaa aagtaagtta cagtgaagta actcattatt gaagaagaaa      480
atgtttttta taaatttagt gtagcccaaa tgttcataaa ttctacagta gtgtagaata      540
atttcctagg cctccacatt cactcaccac tcaactcactg actcatacag agcaacttcc      600
aacctctaag ctccattcct ggtaag                                           626

```

```

<210> 413
<211> 69
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> X = unknown

```

<400> 413

```

Ala Leu Ser Pro Arg Leu Glu Cys Xaa Gly Ala Ile Ser Ala His Cys
1           5           10           15

```

```

Lys Leu Arg Leu Pro Gly Ser Arg His Ser Pro Ala Ser Ala Ser Gln
          20           25           30

```

```

Val Ala Gly Thr Thr Gly Ala Arg His Tyr Ala Arg Leu Ile Phe Cys
          35           40           45

```

```

Ile Phe Leu Val Glu Thr Gly Phe His Arg Phe Ser Arg Asp Gly Leu
          50           55           60

```

```

Asp Leu Leu Thr Ser
65

```

<210> 414  
 <211> 2329  
 <212> DNA  
 <213> Homo sapiens

<400> 414  
 ggctgcggtt gcagtgggtg tggcgggtac cgcacggggt atggtccccg ggtccgaggg 60  
 cccggccccg gccgggagcg tggtgccga cgtggtgttt gtgattgagg gtacggccaa 120  
 cctgggaccc tacttcgagg ggctccgcaa gcactacctg ctcccggcca tcgagtattt 180  
 taatggtggt cctcctgctg agacggactt cgggggagac tatgggggga ccagtagacg 240  
 cctcgtggtg ttcaacacag tggactgcgc tcccagatcc tacgtacaat gtcacgtcc 300  
 caccagcagc gcctatgagt ttgtcacctg gctcgatggc attaagttca tgggcggggg 360  
 tggtagagagc tgcagcctca tcgcggaagg actcagcaca gccttcgagc tgtttgatga 420  
 cttcaagaag atgcgcgagc agattggcca gacgcaccgg gtctgcctcc tcatctgcaa 480  
 ctcaccccca tacttgttgc ctgctgttga gagcaccag tactctggat gcacaactga 540  
 gaatcttgtg cagcagattg gggagcgggg gatccacttc tccattgtgt ctcccggaa 600  
 gctgcctgcg cttcggcttc tgtttgagaa ggcagcccc cggccttgc tggagccgt 660  
 gcagcctccg acagatgtga gccaggaccc gaggcacatg gtgctggttc ggggactcgt 720  
 gctgcctgtt gggggtggct cagccctagg ccccctccag tcaaagcagc cagtccccct 780  
 gcctcccgcc gcaccctcag gtgccactct ctcagcagcc cccagcagc ctctgcccc 840  
 cgtcccccg cagtaccagg ttcccgggaa cctgagtgcg gctcaggtgg ccgcgcagaa 900  
 tgcagtggag gctgccaaga accagaaggc tgggctgggc cctcgcttct cgcccatcac 960  
 ccctctccaa caagctgctc ccggagtggg tcccccttc agccaggccc cagctcccca 1020  
 actaccccca ggacccctg gcgccccaa gccaccact gcttcccagc ccagtctggt 1080  
 ctccactgtg gccctggct cggcctggc tcccacggca cagccgggg caccgtccat 1140  
 ggcaggcact gtggccccag gaggggtgag cggcccttcc ccagcccagc tgggagcccc 1200  
 agccctcggg gggcagcagt cagtctccaa taagcttctg gcctggagcg gggtcctgga 1260  
 gtggcaagag aaacccaaac ctgcctcagt ggatgccaac accaagctga cgcggtcact 1320  
 gccctgccag gtctacgtga atcatggcga gaacctgaag acggagcagt ggccccagaa 1380  
 gctgatcatg cagctcatcc cccagcagct gctgaccacc ctgggccctt tgttccggaa 1440  
 ctcaaggatg gtccagttcc atttcaccaa caaggacctg gagtctctca aaggcctcta 1500

```

ccgcatcatg ggcaacggct tcgcgggctg cgtgcacttc cccacacagg cgccctgtga 1560
ggtgcgcgtg ctcatgctcc tgtactcgtc caagaagaag atcttcatgg gcctcatccc 1620
ctacgaccag agcggcttcg tcaacggcat ccggcaggtc atcaccaacc acaagcaggt 1680
ccagcagcag aagctggagc agcagcagcg aggaatgggg ggacagcagg cccccccag 1740
ggctggggcc cattctggag gaccaagcca ggccctcaca gaatctgctc cagctccgcc 1800
caccgcagcc ccagcctcag ggtaccgtag gggcctctgg ggccacgggg cagccccagc 1860
ccaaggtac tgcccagccc ccgccagggtg cccctcaagg ccctcctgga gcagcttctg 1920
gcccccccc tcctggaccc atccttcggc ccagaaccc tggggccaac cctcagctgc 1980
gaagcctcct cctcaaccca ccaccgccgc agactggggg gccccaccc caggcctccc 2040
tccaccacct gccagtcct ggcccgaca acttccccct cgggctccac tgccaggtaa 2100
ggggacccgg gggagggcag aggtctggac tgagtgtccc agcagctcct gggctagagc 2160
accaagacca agtgctcctg ggaagtaaag acataggatc caagaatgag ggttccccca 2220
gccgggcctg cagcccagcg tcatggagga cgacatcctc atggatctca tctgaatccc 2280
caacacccaa taaagttcct ttttaacaca aaaaaaaaaa aaaaaaaaaa 2329

```

<210> 415  
 <211> 715  
 <212> PRT  
 <213> Homo sapiens

<400> 415

```

Met Val Pro Gly Ser Glu Gly Pro Ala Arg Ala Gly Ser Val Val Ala
1           5           10           15

```

```

Asp Val Val Phe Val Ile Glu Gly Thr Ala Asn Leu Gly Pro Tyr Phe
          20           25           30

```

```

Glu Gly Leu Arg Lys His Tyr Leu Leu Pro Ala Ile Glu Tyr Phe Asn
35           40           45

```

```

Gly Gly Pro Pro Ala Glu Thr Asp Phe Gly Gly Asp Tyr Gly Gly Thr
50           55           60

```

```

Gln Tyr Ser Leu Val Val Phe Asn Thr Val Asp Cys Ala Pro Glu Ser
65           70           75           80

```

450

Pro Ile Thr Pro Leu Gln Gln Ala Ala Pro Gly Val Gly Pro Pro Phe  
 305 310 315 320  
 Ser Gln Ala Pro Ala Pro Gln Leu Pro Pro Gly Pro Pro Gly Ala Pro  
 325 330 335  
 Lys Pro Pro Pro Ala Ser Gln Pro Ser Leu Val Ser Thr Val Ala Pro  
 340 345 350  
 Gly Ser Gly Leu Ala Pro Thr Ala Gln Pro Gly Ala Pro Ser Met Ala  
 355 360 365  
 Gly Thr Val Ala Pro Gly Gly Val Ser Gly Pro Ser Pro Ala Gln Leu  
 370 375 380  
 Gly Ala Pro Ala Leu Gly Gly Gln Gln Ser Val Ser Asn Lys Leu Leu  
 385 390 395 400  
 Ala Trp Ser Gly Val Leu Glu Trp Gln Glu Lys Pro Lys Pro Ala Ser  
 405 410 415  
 Val Asp Ala Asn Thr Lys Leu Thr Arg Ser Leu Pro Cys Gln Val Tyr  
 420 425 430  
 Val Asn His Gly Glu Asn Leu Lys Thr Glu Gln Trp Pro Gln Lys Leu  
 435 440 445  
 Ile Met Gln Leu Ile Pro Gln Gln Leu Leu Thr Thr Leu Gly Pro Leu  
 450 455 460  
 Phe Arg Asn Ser Arg Met Val Gln Phe His Phe Thr Asn Lys Asp Leu  
 465 470 475 480  
 Glu Ser Leu Lys Gly Leu Tyr Arg Ile Met Gly Asn Gly Phe Ala Gly  
 485 490 495  
 Cys Val His Phe Pro His Thr Ala Pro Cys Glu Val Arg Val Leu Met  
 500 505 510  
 Leu Leu Tyr Ser Ser Lys Lys Lys Ile Phe Met Gly Leu Ile Pro Tyr  
 515 520 525

Asp Gln Ser Gly Phe Val Asn Gly Ile Arg Gln Val Ile Thr Asn His  
 530 535 540

Lys Gln Val Gln Gln Gln Lys Leu Glu Gln Gln Gln Arg Gly Met Gly  
 545 550 555 560

Gly Gln Gln Ala Pro Pro Arg Ala Gly Ala His Ser Gly Gly Pro Ser  
 565 570 575

Gln Ala Leu Thr Glu Ser Ala Pro Ala Pro Pro Thr Ala Ala Pro Ala  
 580 585 590

Ser Gly Tyr Arg Arg Gly Leu Trp Gly His Gly Ala Ala Pro Ala Pro  
 595 600 605

Arg Tyr Cys Pro Ala Pro Ala Arg Cys Pro Ser Arg Pro Ser Trp Ser  
 610 615 620

Ser Phe Trp Pro Thr Pro Ser Trp Thr His Pro Ser Ala Pro Glu Pro  
 625 630 635 640

Trp Gly Gln Pro Ser Ala Ala Lys Pro Pro Pro Gln Pro Thr Thr Ala  
 645 650 655

Ala Asp Trp Gly Ala Pro Thr Pro Gly Leu Pro Pro Pro Pro Ala Gln  
 660 665 670

Ser Trp Pro Ala Gln Leu Pro Pro Arg Ala Pro Leu Pro Gly Lys Gly  
 675 680 685

Thr Arg Gly Arg Ala Glu Val Trp Thr Glu Cys Pro Ser Ser Ser Trp  
 690 695 700

Ala Arg Ala Pro Arg Pro Ser Ala Pro Gly Lys  
 705 710 715



(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
27 December 2002 (27.12.2002)

PCT

(10) International Publication Number  
**WO 2002/103028 A3**

(51) International Patent Classification<sup>7</sup>: **G06F 19/00**,  
A61K 39/395

(74) Agent: **SOKOLOV, Andrey Borisovich**; Sokolov,  
Razborov & Razborova, Suite 223, ul. Bratevskaya, 10-4,  
P.O. Box 23, Moscow, 115612 (RU).

(21) International Application Number:  
PCT/IB2002/004189

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,  
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN,  
YU, ZA, ZM, ZW.

(22) International Filing Date: 30 May 2002 (30.05.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/293,999 30 May 2001 (30.05.2001) US  
60/330,457 22 October 2001 (22.10.2001) US  
60/357,144 19 February 2002 (19.02.2002) US

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent  
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
NE, SN, TD, TG).

(71) Applicant: **BIOMEDICAL CENTER [RU/RU]**; 7, Pu-  
dozhskaja St., 197110 St. Petersburg (RU).

**Published:**

- with international search report
- with sequence listing part of description published sepa-  
rately in electronic form and available upon request from  
the International Bureau

(72) Inventors: **BARANOVA, Anna Vjacheslavovna**;  
12313 Oak Greek Lane #1521, Fairfax, VA 22033  
(US). **YANKOVSKY, Nikolay Kazimirovich**; V. Radis-  
chevskaja Str., 13/15,59, Moscow, 109004 (RU). **KO-  
ZLOV, Andrey Petrovich**; 6-th Krasnoarmeiskaja Str.,  
14,24, St Petersburg, 198052 (RU). **LOBASHEV, Andrey  
Vladimirovich**; Profsouznaya Str., 43-1-72, Moscow,  
117420 (RU). **KRUKOVSKAYA, Larisa, Leonidovna**;  
Chapaeva Str., 2a,27, St Petersburg 197046 (RU).

(88) Date of publication of the international search report:  
17 June 2004

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

WO 2002/103028 A3

(54) Title: **IN SILICO SCREENING FOR PHENOTYPE-ASSOCIATED EXPRESSED SEQUENCES**

(57) Abstract: The present invention provides methods for determining whether a nucleic acid sequence is a marker for a phenotype or cell type of interest which comprises providing a database of expressed sequence tag sequences (EST's) from the species; placing said EST's in groups termed clusters based on homology of EST's within each cluster; determining for each cluster the total number of EST's within said cluster; ordering said clusters sequentially based on the number of EST's in each cluster; dividing said ordered clusters into subranges based on the number of EST's per cluster; determining for each cluster subrange obtained from step (c) the number EST's within said cluster which are expressed in said predetermined cell type of interest; calculating according to a normal distribution the number of clusters in each subrange expected to contain a predetermined threshold percentage of EST's expressed in said cell type of interest, wherein said threshold percentage is a percentage from about 10% to about 100%; determining the number of clusters in each subrange observed to contain said predetermined threshold percentage of EST's expressed in said predetermined cell type; and identifying subranges having an observed number of clusters that meet said predetermined threshold percentage greater than the number of clusters expected to meet said predetermined threshold percentage for the subrange according to normal distribution; wherein if the percentage of EST's expressed in said cell type of interest in a cluster identified is equal to or greater than said predetermined threshold percentage, the cluster contains a nucleic acid that is a marker for the cell type of interest.

## INTERNATIONAL SEARCH REPORT

Int Application No  
PCT/IB 02/04189A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G06F19/00 A61K39/395

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G06F A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EP0-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	VASMATZIS G: "Discovery of three genes specifically expressed in human prostate by expressed sequence tag database analysis" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, US, vol. 95, January 1998 (1998-01), pages 300-304, XP002151634 ISSN: 0027-8424 cited in the application abstract page 300 - page 301 ----- -/--	1,40,47

☒ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"A" document member of the same patent family

Date of the actual completion of the international search

18 November 2003

Date of mailing of the international search report

11.02.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Chabros, C

# INTERNATIONAL SEARCH REPORT

Int. Application No  
PCT/IB 02/04189

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>SCHMITT A O ET AL: "EXHAUSTIVE MINING OF EST LIBRARIES FOR GENES DIFFERENTIALLY EXPRESSED IN NORMAL AND TUMOUR TISSUES" NUCLEIC ACIDS RESEARCH; OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 27, no. 21, 1999, pages 4251-4260, XP000872807  ISSN: 0305-1048  abstract  table 1  page 4251, paragraph 1 - page 4253, paragraph 1</p> <p>-----</p>	1,40,47
A	<p>AUDIC S ET AL: "THE SIGNIFICANCE OF DIGITAL GENE EXPRESION PROFILES" GENOME RESEARCH, COLD SPRING HARBOR LABORATORY PRESS, US, vol. 7, 1997, pages 986-995, XP000915029  ISSN: 1088-9051  page 986 - page 989</p> <p>-----</p>	1,40,47

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB 02/04189

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-21, 40-55

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims: 1-21,40-55

relates to a method for determining nucleic acid markers for a predetermined phenotype or cell type of interest, consisting of algorithmic steps.  
Independent claims 40 and 47 define embodiments of independent claim 1.  
---

Inventions 2-202: claims 22-39 (all partially)

relate to nucleic acid sequences identified by SEQ ID NOs 9-141, cited in claim 24, and corresponding amino acid sequences, cited in claim 29.  
---

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**